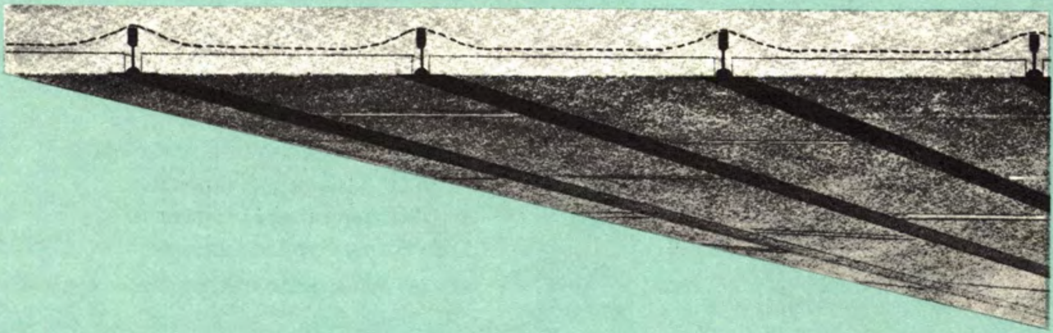
A.I.A. File 4-L

TECHNICAL INFORMATION

PYROFILL* GYPSUM CONCRETE ROOF DECKS



UNITED STATES GYPSUM

1964

*T.M. Reg. U.S. Pat. Off.

A.I.A. File 4-L

PYROFILL*
GYPSUM ROOF DECKS

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DESCRIPTION

The PYROFILL Roof Deck System is constructed of steel sub-purlins which support permanent formboards for reinforced, poured-in-place PYROFILL Gypsum Concrete.

Its design concept has endured for over 40 years through eminent performance on virtually all types of buildings and maintains several basic differences from poured-in-place concrete roof deckings (either reinforced or light weight):

1. The PYROFILL Gypsum Concrete fill dries down through the formboard.
2. The formboard is a non-structural component and does not require venting clips.
3. The system does not require "curing" to achieve early or ultimate strengths.
4. The reinforced roof fill is a strong diaphragm which is integrated with the roof framing by the welded steel sub-purlins. The combined PYROFILL—sub-purlin action provides strong resistance to both vertical and horizontal forces.
5. United States Gypsum Co. designs and sells both the fill and the formboards. Hence, the roof deck contractor is assured of unit responsibility via quality materials.

United States Gypsum Company manufactures the following products designed for use in the construction of PYROFILL Roof Decks:

1. SHEETROCK* Formboard
2. Plastic Faced SHEETROCK Formboard
3. USG* Insulating Formboards
4. USG Acoustical Formboards
5. PYROFILL Gypsum Concrete

UNITED STATES GYPSUM COMPANY HAS DISTRICT SALES OFFICES IN THE FOLLOWING CITIES

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ALBUQUERQUE, N.M.
ATLANTA, GA.
BALTIMORE, MD.
BIRMINGHAM, ALA.
BUFFALO, N.Y.
BOSTON, MASS.
(WALTHAM)
CHARLOTTE, N.C.
CHICAGO, ILL.
CINCINNATI, OHIO
CLEVELAND, OHIO
(CLEVELAND HEIGHTS)
COLUMBUS, OHIO
DALLAS, TEXAS
DENVER, COLO.
DETROIT, MICH.
(SOUTHFIELD)
ELMHURST, ILL.
GRAND RAPIDS, MICH.
HARRISBURG, PA.
HEMPSTEAD, L.I., N.Y.
HOUSTON, TEXAS
INDIANAPOLIS, IND.
JACKSONVILLE, FLA.
KANSAS CITY, MO.
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LOUISVILLE, KY.
MADISON, WISC.
MEMPHIS, TENN.
MIAMI, FLORIDA
(NORTH MIAMI)
MILWAUKEE, WISC.
MINNEAPOLIS, MINN.
NEWARK, N.J.
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(HAMDEN)
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NEW YORK, N.Y.
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(SAN LEANDRO)
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TAMPA, FLA.
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DESCRIPTION (continued)

Specifications for the selection of these products and the installation of the PYROFILL System are listed on the last page of this folder. United States Gypsum Company also manufactures THERMOFILL* Gypsum Concrete, which provides insulating and structural values different from the basic System and requires relevant specifications and details. Contact your local United States Gypsum Company Sales Office for details and recommendations regarding the use of THERMOFILL.

FUNCTION

PYROFILL* Roof Decks can be designed and constructed for any plan or shape of building providing both superior structural values and a monolithic base for the roofing membrane. PYROFILL Decks afford high safety factors for vertical loads and seismic forces while meeting the requirements of most building codes for dead and live loads. For other than extreme loading conditions, the load carrying ability of a PYROFILL Roof Deck is established by the selection of the steel subpurlins and the supporting roof framing members.

Generally, PYROFILL Roof Decks are installed over steel roof framing for flat or near-flat roofs. However, they are adaptable to low-pitched or geometric roof constructions in all forms whether the roof framing is of steel, concrete or wood. **Simplicity of design and the strength** of the PYROFILL System allows complete freedom to both the architect and his structural engineer in designing for roof loads. The System has been tested for up to 125 lbs./sq. ft. resistance to uplift caused by winds; spacings of roof purlins can be anything up to 12′; eight formboards are available for use, singly or in combination, for a variety of job requirements.

FIRE RESISTIVE

PYROFILL Roof Decks supported by protected structural steel are incombustible and fire tests at a national agency have demonstrated one to two hour fire endurance, without a suspended ceiling beneath. Obviously, this ensures greater protection from fire for the roof of the structure and fire insurance rates can be reduced by as much as 30%. (See table below.)

ECONOMY

PYROFILL Roof Decks are always available at low, competitive costs, yet provide the advantages of high strength, fire resistance, quick installation and job control. Savings are possible through elimination of supplementary fireproofing materials, ease of application, lower steel requirements, earlier occupancy and lower fire insurance rates.

EXPERT INSTALLATION

Expert roof deck contractors are available nationally for bidding and constructing PYROFILL Roof Decks (according to specifications) for practically all types of building construction throughout the United States. Their trained mechanics can install as much as 20,000—25,000 square feet of PYROFILL in one day. The quick setting action of PYROFILL (typically—less than 30 minutes) allows the application of the roofing membrane to begin within hours, not days, after pouring because PYROFILL does not require curing to attain structural strength.

PRODUCT DESCRIPTION

PYROFILL Gypsum Concrete is mill-formulated and composed of calcined gypsum and wood chips or shavings. It is mixed with clean water, only, at the job site and poured-in-place over permanent formboards. PYROFILL complies with ASA—A59.1—1954 and A.S.T.M. C 317-55 Standards.

THERMOFILL* Gypsum Concrete is mill formulated and composed of calcined gypsum and graded perlite aggregate. It is mixed with clean water, only, at the job site and poured-in-place over permanent formboards. THERMOFILL complies with ASA 59.1—54 and A.S.T.M. C 317-55 Standards. Not available north of 40th Parallel from October 1 to April 1.

See pages 4 and 5 for complete descriptions of USG Formboards used with PYROFILL Gypsum Roof Decks.

All formboards manufactured by United States Gypsum Company are treated to resist mildew effectively where adequate ventilation is maintained in the adjacent air space.

All formboards manufactured by United States Gypsum Company can be used in concealed or exposed roof decking. The Plastic Faced SHEETROCK Formboard does not require painting, where used as the exposed roof deck surface. The other formboards, including those with mill primed finishes, can receive finish coats of paints (for final decoration or to hide water stains) where used as the exposed roof deck surface. See pages 6 and 7 for recommendations for painting all types of USG Formboards used in PYROFILL Roof Decks.

GYPSUM DECK CHARACTERISTICS	Total Deck Thickness	Formboard Thickness	Reinforcing Mesh	Fire Resistance Rating	Source
Plain SHEETROCK or Plastic Faced SHEETROCK	2½″	½″	48-1214 (1)	1-hour	NBS Test #400 Aug.-13, 1958
	3″	½″		2-hour	NBS Test #406 Aug.-11, 1959
USG Acoustical	3″	1″	48-1214 or KEYDECK	—	—
USG Insulation	3″	1″		—	—
Asbestos Cement	2½″	¼″		Incombustible	UL[3]

1. Self furring wire mat, ½″ crimp, in 3″ (total thickness) deck for 2-hour fire rating.
2. Flame spread for such formboards determined by Underwriters' Laboratories, Inc., for the Gypsum Association (Report R-3110 May 25, 55).
3. *Tested by Underwriters' Laboratories, Inc., per ASTM E84-50T.*

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FORMBOARDS

SHEETROCK* Formboard

Sheetrock Formboard is a rigid type gypsum board, ½″ thick by 32″ wide (or 48″ wide), and made to specified lengths to fit purlin spacings. Treated to resist mildew effectively where adequate ventilation is provided. *Tested for 1- and 2-hour fire ratings when used with 2-inch or 2½-inch thick gypsum slab and exposed bulb tees.*

Uses—*Ideal for almost every roof deck need, concealed or exposed. Economical for warehouses, light manufacturing buildings, schools—in any construction where durability and low cost are desired.*

Plastic Faced SHEETROCK Formboard

Plastic Faced Sheetrock Formboard is a rigid type gypsum board ½″ thick by 32″ wide, treated to resist mildew, incombustible and predecorated with a white vinyl plastic surface; washable, highly light-reflective and durable; for interior, exposed ceilings or exterior soffits. **Note**—*Available in standard 8′ lengths. For information regarding availability of other sizes, contact your U.S.G. representative.*

Uses—*Durable and easy to maintain, this plastic-surfaced formboard is handsome for interior uses—excellent for exterior deck under-surfaces; eave overhangs, open walkways, and other areas exposed to intermittent weather, steam and moisture. Attractive white plastic finish resists dust; may be washed, if necessary; reduces maintenance costs.*

USG* Acoustical Formboard

USG Acoustical Formboard is a rigid type wood fiber insulation board having a *slotted* or *perforated* acoustical surface shop painted white. It is 1″ x 12″ x 24″ in size and is treated to resist mildew effectively where adequate ventilation is provided.

Note—*USG Acoustical Formboard is shop primed white to provide an economical paint base for further decoration necessary to cover possible water staining and surface discoloration. Field painting after the slab is dry should be covered in the Architects' Specification.*

Uses—*Excellent for exposed ceilings in classrooms, offices and wherever built-in acoustical and insulative properties are desired. The result is a major saving under cost of separate acoustical and insulative ceiling treatment.*

USG Insulation Formboards

USG Insulation Formboards are rigid type, natural color wood fiber boards sized 1″ thick, 32″ or 48″ wide, cut to specified lengths to fit purlin spacings. Also available ¾″ thick, 32″ wide, cut to fit purlin spacings. The natural color of Insulation Formboards will vary slightly so field painting is required if a uniform appearance is desired. USG Insulation Formboards are treated to resist mildew effectively where adequate ventilation is provided.

Note—*Mill Primed USG Insulation Formboard is shop primed white to provide an economical paint base for further decoration necessary to cover possible water staining and surface discolorations. Field painting after the slab is dry should be covered in the Architects' Specification.*

Uses—*Unexcelled for concealed interior construction areas that will have suspended ceilings. Provides a wide range of insulative factors to suit your requirements.*

Asbestos Board

Asbestos-cement Formboard is a rigid industrial type asbestos cement board, ¼″ thick, cut to 32″ wide by 48″ long. Supplemental tees are required to support exposed end joints when they are not supported by the sub-structure.

Note—*Asbestos-cement formboard is not manufactured by U.S.G.*

Uses—*This formboard is ideal for use on outdoor eave overhangs, covered walkways and applications above heat-producing machinery.*

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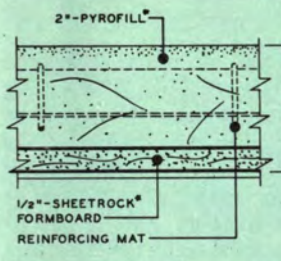
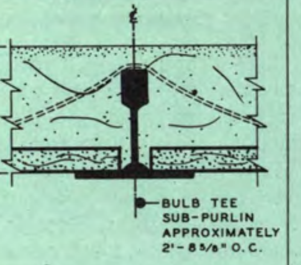
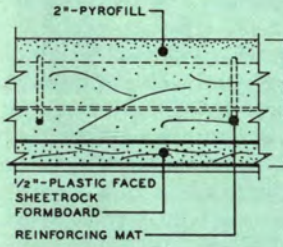
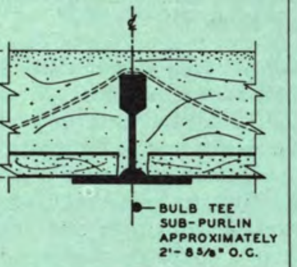
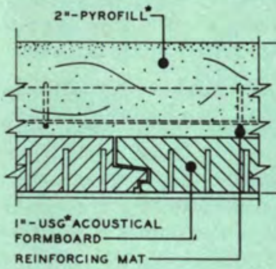
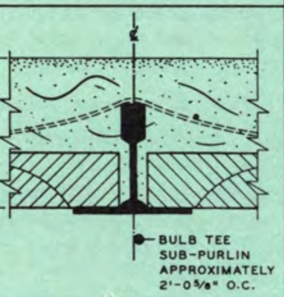
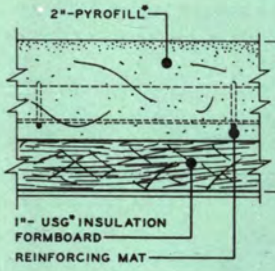
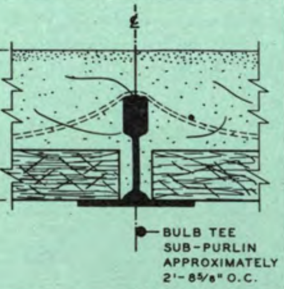
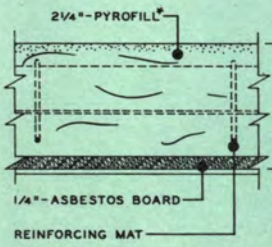
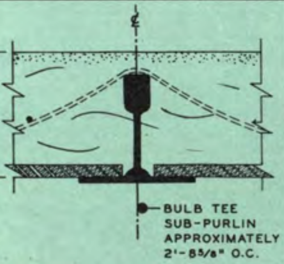
CROSS SECTION LONGITUDINAL	CROSS SECTION TRANSVERSE	THICK-NESS (Inches)	WIDTH (Inches)	LENGTH (Feet)	FLAME SPREAD	NOISE REDUCTION COEFFICIENT	LIGHT REFLECTION COEFFICIENT	SPECIFICATION COMPLIANCE
 2"-PYROFILL* 2 1/2" 1/2"-SHEETROCK* FORMBOARD REINFORCING MAT		½"	32" or 48" (3)	Up to 12', Max.	15-20 (1)	—	66%	FEDERAL SPECIFICATION SS-W 51-A Type A A.S.T.M. C-317-55 C-472-61
 2"-PYROFILL 2 1/2" 1/2"-PLASTIC FACED SHEETROCK FORMBOARD REINFORCING MAT		½"	32"	8' Only	20-25 (1)	—	75%	—
 2"-PYROFILL* 3" 1"-USG* ACOUSTICAL FORMBOARD REINFORCING MAT		1"	12"	24"	— (2)	.65	78%	FEDERAL SPECIFICATION SS-A-118b Type II-B Perforated and Type II-C Slotted
 2"-PYROFILL* 3" 1"- USG* INSULATION FORMBOARD REINFORCING MAT		¾" 1"	32" Only 32" and 48" (3)	Up To 12' Max.	— (2)	(Plain) .35 (Mill Primed) .25	(Plain) 40% (Mill Primed) 78%	FEDERAL SPECIFICATION LLL-F-00321b A.S.T.M. 208-55 Class-A
 2 1/4"-PYROFILL* 2 1/2" 1/4"-ASBESTOS BOARD REINFORCING MAT		¼"	32"	48"	0	—	40%	FEDERAL SPECIFICATION SS-S-283-A Type U Type F

1. Flame spread ratings determined by Underwriters' Laboratory testing.
2. USG Insulation PYROFILL and USG Acoustical PYROFILL Decks are usually classed as incombustible with a deficiency penalty when combustible formboard is used.
3. 48" wide formboard may be used with light sub-purlin sections only if main supporting steel is spaced not to exceed 36" o.c.

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RECOMMENDATIONS

Expansion and Contraction—Pyrofill Roof Decks, like all roof decks, are subject to expansion and contraction due to temperature changes. Bulb tees welded to steel framing limit slab movement that would exert itself at right angles to the direction of the bulb tees. The following is suggested as a guide:

1. Provide expansion joints in the deck and the roofing wherever they are provided in the main structure.
2. Long narrow buildings should have expansion joints through the deck and the supporting structure spaced not more than 200 ft. apart.
3. Separate wings of "L," "U" and "T" shaped buildings with expansion joints.
4. A mineral fiber filler strip should be installed at all structural roof penetrations and at walls crossing the ends of sub-purlins. See details on pages 10 and 11.

To enable you to resolve specific problems the coefficient of linear expansion of gypsum concrete is .0000085 per °F; the coefficient of linear expansion of steel is .0000065 per °F. See *Steel Construction*, Manual of the A.I.S.C., for method of calculating expansion of bodies by heat.

Decorating—When decoration is desired, painting should not be done until the slab is thoroughly dry. Before painting, the slab should be checked for dryness throughout its entire thickness. An electric type moisture meter can be used if contacts are driven well into interior of slab. Exposed metal, such as sub-purlin flanges, should be protected with a suitable metal primer before finish coats are applied.

Note—Pyrofill Roof Decks do not generally require further decorating, as the formboards provide a presentable undersurface.

Drying—Pyrofill roof slabs dry out from the underside (through the formboard). Adequate heat and ventilation below the slab are required to permit the escape of this moisture. In buildings without windows or with fixed windows adequate mechanical (forced) ventilation is required to remove all construction moisture. Pyrofill is not recommended as a fill over concrete slabs, steel decks and other decks of low permeability. Consult your USG representative if unusual conditions prevail.

Ventilation should be provided for any plenum or joist space between *all* roof deck and ceiling constructions. The venting of enclosed air spaces should be accomplished by natural or artificial means, both *during* and *after* construction of the building. Such venting accomplished by roof vents or soffit louvers to the outside does not appreciably affect plenum or interior temperatures. Consult the *Heating, Ventilating, Air Conditioning Guide*, latest edition, published by the American Society of Heating, Refrigerating & Air Conditioning Engineers, for data on ventilating attic spaces and locations of vapor barriers.

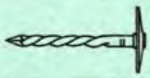
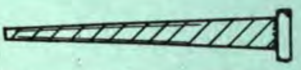
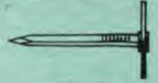
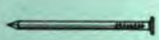
Uplift—During hurricanes or high winds all roof decks are subject to uplift forces. Therefore, roof decks should be anchored to supports to resist this uplift. In developing adequate resistance, the total dead load of the roof deck can be considered as part of the total resistance. In laboratory tests, Pyrofill roof decks, using steel rails or bulb tee sub-purlins welded to the steel framing, have an average uplift resistance equivalent to more than 125 lbs. per sq. ft. Slabs with standard tee or flanged channel (fence post sections) sub-purlins and slabs over bar-joists should have supplemental anchorage to develop the required uplift resistance.

REFERENCE: Armour Research Foundation Test M1068.

Roofing—During application, Pyrofill Roof Decks withstand the effects of normal rainfall, snow, freezing and thawing; however, they should be covered as soon as practicable. The water-proof (built-up type) roof covering should be applied as soon as the top surface of the slab is reasonably dry; i.e., when there is no visible moisture gloss. For the application of built-up roof covering, USG recommends that a 43# base sheet, or equal, be nailed for the first ply. A 5d or 6d square cut nail is suggested through a metal roofing cap. See table of nail holding values below.

NAIL HOLDING POWER (see foot notes)

Resistance to direct pull in pounds per nail for penetration shown

Type of nail		Screw-Tite Squarehead (B)	La Belle Square Cut Nails (D)		Gypsum Deck Nails (A) (C)		Wire Nails
			6-Penny Common	6-Penny Cornice	1½"	1¾"	7-Penny Common
Finish of nail tested		Plain	Plain	Plain	Plain	Plain	Plain
Head dimension		15/16" square	.27"x.21"	.34"x.28"	dia. .975"	dia. .975"	¼" Round
Shank at head		.125"	.19"x.114"	.23"x.14"	.152"x.103"	.197"x.125"	11.5 Ga.
Shank at point		.125"	.10"x.07"	.13"x.08"	.092"x.071"	.125"x.115"	11.5 Ga.
Lengths		1¾"	2"	2"	1½"	1¾"	2¼"
Penetration		1½"	1.75"	1.75"	1.25"	1.50"	2.0"
Holding power	Wet (1 day)	46.5	26.5	34.0	14.5	28.0	—
in PYROFILL	Dry	62.0	226.0	180.0	116.0	181.0	28.0
Details							

NOTES: 1. Values are from tests conducted at USG Research Laboratories and provide relative holding power for the type of nail shown. (Under conditions described in Notes 2 & 3 below: Selection of nails will depend on the roofing manufacturer's recommendations and spacing of nails.)

2. Nails were driven by hand with a hammer and withdrawn immediately by means of a weighted lever arm.

3. The dry density of the PYROFILL was approximately 52 pounds per cu. ft.

4. Other nails of the same shank size and penetration should give equal holding power.

(A) Manufactured by Crescent Brass & Pin Co., Detroit.

(B) Manufactured by Independent Nail & Packing Co., Bridgewater, Mass.

(C) Manufactured by Simplex Nail & Manufacturing Corp., Americas, Ga.

(D) Manufactured by Wheeling Corrugating Co., Wheeling, West Virginia.

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LIMITATION OF USE

Formboards should always be stored in a dry place. The normal moisture from a PYROFILL* slab has no effect on the performance of the formboards. Soaking of the formboard prior to the pouring of the slab can result in excessive deflection. The roof covering should be applied as soon as possible after erection to protect the construction from precipitation. Discoloration or staining of the formboard may occur if subjected to prolonged exposure to moisture. If staining will be objectionable, the formboard may be painted; see recommendations below.

Excessive Moisture or Temperature—PYROFILL roof decks are suitable for all types of buildings and occupancy with normal temperature and humidity conditions. Where intermittent very high temperatures occur, it is advisable to use cement-asbestos board PYROFILL roof decks. Where abnormally high humidity conditions prevail, such as in wet process plants, or where unusually high temperatures prevail such as in foundries, over breechings, in furnace rooms, etc., consult your USG representative for recommendations.

Acids—Acid fumes generally are not harmful to gypsum although they may be harmful to framing materials. Where acid fumes are considered a problem, consult your local USG representative.

Heavy Loads—Although the reinforced PYROFILL slab will carry loads in excess of 100 lbs. per sq. ft. with an adequate safety factor, the sub-purlins or bar joists govern the safe load limit. All superimposed concentrated loads, such as flag pole bases, water tanks and ventilating fans, must be directly or indirectly supported on steel framing, not on the gypsum slab.

Steep Roofs—PYROFILL roof slabs are designed to receive built-up roof coverings. On steep roofs, where slate, ceramic tile or rigid type shingle roof coverings are required, the use of USG* METAL EDGE GYPSUM PLANK is recommended. See page 6 for PYROFILL nail holding data.

Suspended Ceilings—Suspended ceilings under PYROFILL roof decks should be hung from the structural steel frame. If they are hung from the roof deck, the hangers should be attached to the sub-purlins, never to the gypsum slab alone. See details page 11. When hung from the sub-purlins, the sub-purlins must be capable of supporting the total weight including the ceiling load with a resultant deflection not to exceed 1/360 of their span. See selection table on page 9 for load values of various sub-purlins.

PAINTING RECOMMENDATIONS FOR POURED GYPSUM ROOF DECK SYSTEMS

**Painting should not be started until the slab and formboard are thoroughly dry.
Metal parts should be protected with a suitable metal primer.**

FORMBOARDS	RECOMMENDATIONS
SHEETROCK*	A breather type paint such as TEXOLITE* Alkyd Latex paint is recommended. The paint may be applied by brushing, rolling or spraying. A fungicide must be added to the paint. With TEXOLITE Alkyd Latex use 1⅛ ounces of Dowicide "G" per ½ gallon of water thinner used. For fungicides in other paints check manufacturer's specific recommendations.
Plastic Faced SHEETROCK	Painting not required. For use in exposed ceiling areas or exterior soffits.
USG Acoustical	A breather type paint such as TEXOLITE Alkyd Latex paint is recommended. The paint may be applied by brushing, rolling or spraying. A fungicide must be added to the paint. With TEXOLITE use 1⅛ ounces of Dowicide "G" per ½ gallon of water thinner used. For fungicides in other paints check manufacturer's specific recommendations.
USG Insulation	A breather type paint such as TEXOLITE Alkyd Latex paint is recommended. The paint may be applied by brushing, rolling or spraying. A fungicide must be added to the paint. With TEXOLITE Alkyd Latex use 1⅛ ounces of Dowicide "G" per ½ gallon of water thinner used. For fungicides in other paints check manufacturer's specific recommendations.
Asbestos Cement	Use TEXOLITE Vinyl Exterior breather type paint. Apply by brushing, rolling or spraying.

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*T. M. Reg. U. S. Pat. Off.

SUB-PURLIN PROPERTIES
THERMAL INSULATION VALUES

DESIGN

PYROFILL* Decks are composed of PYROFILL Gypsum Concrete, reinforced, poured over permanent formboards and are designed to span continuously over sub-purlins. Reinforcing mesh for PYROFILL is one of the following types:

1. KEYDECK—A galvanized wire mesh, woven with 16 gauge straight wires and 19 gauge diagonal wires.
2. 48-1214—A galvanized, welded, wire mesh with 12 gauge longitudinal wires at 4″ on centers and 14 gauge transverse wires at 8″ on centers.

The effective cross-sectional area of reinforcing mesh at right angles to the sub-purlins is .026 sq. in. per lineal foot of slab.

Note—*U.S.G. neither manufactures or sells reinforcing mesh.*

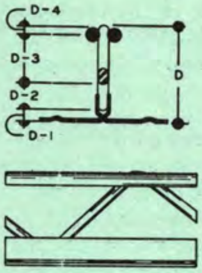
DECK WEIGHTS (1)

DECK WEIGHTS (1)	APPROX. DECK WEIGHT PER SQUARE FOOT
2½″ SHEETROCK PYROFILL Roof Deck (2″ PYROFILL over ½″ SHEETROCK or ½″ Plastic Faced SHEETROCK)	10.7
3″ USG Insulation PYROFILL Roof Deck or 3″ USG Acoustical PYROFILL Roof Deck (2″ PYROFILL over 1″ Wood Fiber Formboard)	10.4
2½″ Asbestos Board PYROFILL Roof Deck (2¼″ PYROFILL over ¼″ Asbestos Board)	12.2
2¾″ USG Insulation PYROFILL Roof Deck (2″ PYROFILL over ¾″ Wood Fiber Formboard)	9.9

(1) Add Sub-purlin weight to deck weight in calculating total dead loads.

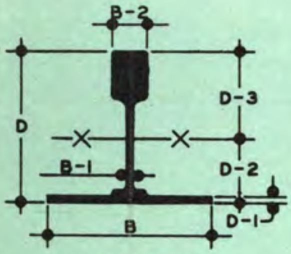
SUB-PURLIN—PROPERTIES AND DIMENSIONS

TRUSSED TEE

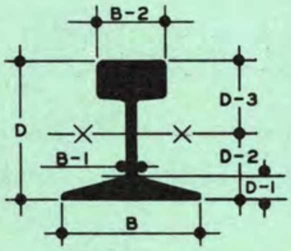


SIZE	I in.^{4}	S BTM	S TOP	D^1	D^2	D^3	D^4	2 Wires in.^{2}	1 Wire in.^{2}	2 Angles in.^{2}
5-9-16 D=1¾″	.1123	.1919	.1057	.1694	.4157	1.0614	.1035	.0672	.0173	.1718
4-5-16 D=2″	.1860	.3054	.1454	.1307	.4779	1.2787	.1127	.0797	.0336	.2135
4-5-16 D=2½″	.3025	.4062	.1841	.1307	.6139	1.6427	.1127	.0797	.0336	.2135
1-5-16 D=2″	.2433	.3155	.2238	.1307	.6406	1.0872	.1415	.1258	.0336	.2135
1-5-16 D=2½″	.3999	.4180	.2853	.1307	.8260	1.4018	.1415	.1258	.0336	.2135
0-5-14 D=2″	.2861	.3833	.2601	.1409	.6057	1.1001	.1533	.1476	.0336	.2681
0-5-14 D=2½″	.4723	.5111	.3320	.1409	.7832	1.4226	.1533	.1476	.0336	.2681

(E) Edge Steel Products, Inc.—Olathe, Kansas



BULB TEE



A.S.C.E. RAIL

ROLLED TEES

TYPE	WT. lbs. LF	WT. lbs. SF	I IN^4	S IN^3	B IN.	B^1 IN.	B^2 IN.	D IN. (D^2&D^3)	D^1 IN.	D^2 IN.	D^3 IN.
1120 B.T. (C)	1.25	.460	.108	.110	1.5	.100	.375	1.500	.100	.525	.975
112 (I)	1.40	0.51	.123	.126	1.500	.109	.375	1.500	.109	.522	.978
158 B.T. (C)	1.40	.513	.173	.171	1.375	.10	.375	1.687	.109	.569	1.010
158 B.T. (I)	1.60	0.540	.170	.172	1.562	.121	.375	1.625	.121	.635	.990
168 B.T. (C)	2.00	0.740	.250	.260	1.625	.109	.453	1.750	.109	.789	.961
168 B.T. (I)	2.00	0.740	.247	.240	1.625	.125	.437	1.750	.132	.722	1.028
178 B.T. (C)	2.50	0.910	.389	.367	1.875	.125	.688	1.875	.125	.816	1.059
178 B.T. (I)	2.50	0.920	.364	.340	1.900	.140	.562	1.875	.140	.805	1.070
200 B.T. (C)	2.90	1.064	.495	.474	2.000	.125	.688	2.000	.125	.955	1.045
200 B.T. (I)	3.00	1.100	.503	.460	2.063	.140	.656	2.000	.140	.908	1.092
218 B.T. (C)	3.00	1.101	.601	.527	2.047	.125	.734	2.125	.125	.985	1.141
218 B.T. (I)	3.00	1.101	.598	.520	2.125	.125	.687	2.125	.140	.975	1.150
228 B.T. (C)	3.65	1.340	.862	.745	2.125	.125	.875	2.312	.125	1.156	1.156
228 B.T. (I)	3.65	1.340	.868	.736	2.063	.125	.875	2.312	.140	1.180	1.132
16-lb. Rail (C)	5.33	1.958	1.240	1.010	2.375	.219	1.172	2.375	.375	1.147	1.228
258 B.T. (C)	4.67	1.720	1.388	1.057	2.250	.141	.937	2.625	.141	1.312	1.312
20-lb. Rail (C)	6.67	2.420	1.940	1.430	2.625	.250	1.344	2.625	.438	1.268	1.357
30-lb. Rail (C)	10.00	3.680	4.060	2.530	3.125	.328	1.687	3.125	.531	1.520	1.605

(I) Inland Steel Company—30 W. Monroe St., Chicago 3, Ill.

(C) Connors Steel Division—H. K. Porter Co., Huntington, W. Va.

Note: All properties shown are taken from data furnished by manufacturers indicated above.

THERMAL INSULATION VALUES

(Btu per sq. ft., per hr., per deg. F. diff. in temperature) "U" Factor for complete roof slab including built-up roof covering (supporting steel not included)

	NO INSULATION (1)		½″ INSULATION (1)		1″ INSULATION (1)		METAL LATH & PLASTER CEILING (2)	
	SUMMER	WINTER	SUMMER	WINTER	SUMMER	WINTER	SUMMER	WINTER
2½″ SHEETROCK PYROFILL ROOF SLAB 2″ PYROFILL Gypsum Concrete Over ½″ SHEETROCK or ½″ Plastic Faced SHEETROCK	0.33	0.38	0.22	0.24	0.17	0.18	0.22	0.25
3″ U.S.G. INSULATION PYROFILL ROOF SLAB 2″ PYROFILL Over 1″ U.S.G. INSULATION FORMBOARD	0.18	0.19	0.14	0.15	0.12	0.13	0.14	0.15
3″ U.S.G. ACOUSTICAL PYROFILL ROOF SLAB 2″ PYROFILL Over 1″ ACOUSTICAL FORMBOARD	0.19	0.20	0.15	0.16	0.12	0.13	0.15	0.16
2½″ Asbestos Board PYROFILL ROOF SLAB 2¼″ PYROFILL Over ¼″ Asbestos Board	0.34	0.39	0.23	0.25	0.18	0.19	0.24	0.26

(1) No ceiling beneath

(2) Suspended ¾″ Plaster ceiling & vented air space, no added insulation.

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*T.M. Reg. U.S. Pat. Off.

Steel Sub-Purlins vary in size, weight and shape and are selected according to required span and loading. They provide anchorage of the deck against uplift, and restrict movement of the deck due to temperature change. Sub-purlins are spaced to accommodate 24″, 32″ or 48″ formboard widths with a slight tolerance for ease of formboard placement. When 48″ wide formboard is used with light sub-purlin sections, supporting steel spacing should not exceed 36″ on center.

Installation—Sub-purlins are spaced approximately 48⅝″, 32⅝″ or 24⅝″ on center and are welded to the structural framing members. Formboards are placed atop the bottom flanges of the sub-purlins. Welded wire reinforcing mesh is laid over the sub-purlins and formboards. PYROFILL Gypsum Concrete, mixed with clean water (only) at the site, is poured and screeded to a uniform 2″ minimum thickness over the formboard.

SUB-PURLINS FOR 2″ PYROFILL SLABS OVER FORMBOARDS

TRUSSED TEE

VALUES SHOWN BELOW are on the basis of the Tee, Mesh, and Gypsum acting as a composite section; from data furnished by Edge Steel Products, Inc.

Type	Weight Pounds Lin. Ft.	SAFE TOTAL LOAD in pounds per sq. ft. deflection less than 1/360 of span.†														Maximum Eaves Overhang
		3′0″	3′6″	4′0″	4′6″	5′0″	5′6″	6′0″	6′6″	7′0″	7′6″	8′0″	8′6″	9′0″	9′6″	
5-9-16 D=1¾″	.90		148	113	89	73	60									1′6″
4-5-16 D=2″	1.16					100	82	69	59	51						1′9″
4-5-16 D=2½″	1.16					127	105	88	75	65						1′9″
1-5-16 D=2″	1.32								74	64	56	49				2′0″
1-5-16 D=2½″	1.32								88	76	66	58				2′0″
0-5-14 D=2″	1.57										72	63	56	50	45	2′3″
0-5-14 D=2½″	1.57										80	70	62	56	50	2′3″

Safe load tables are based on uniformly distributed loads on 3 continuous spans and with Sub-Purlins spaced 32¾″ O.C.
For Sub-Purlins spaced 24¾″ O.C. multiply value by 1.325. The 2½″ Trussed-Tee is recommended when formboard of 1″ thickness is used.
†For tables showing deflections less than 1/240 consult Edge Steel Products, Inc. Technical Folder.

ROLLED TEES

Values shown by figures on color background are based on properties determined by each sub-purlin manufacturer with fs @ 20,000 psi. Values shown on white background are for fs @ 30,000 psi. Sub-Purlins spaced 2′8⅝″ on center. M=1/10 WL² except as noted. Exceptions to spacing and slab thickness are noted in table.

TYPE	TOTAL SAFE UNIFORM LOAD IN LBS. PER SQ. FT.																			Max. Eave Overhang See Note 7 & 8
	3′0″	3′6″	4′0″	4′6″	5′0″	5′6″	6′0″	6′6″	7′0″	7′6″	8′0″	8′6″	9′0″	9′6″	10′0″	10′6″	11′0″	11′6″	12′0″	
1120 B.T. (C)	75 113	55 78•	43 52•	33 37•	26 41	34														1′9″
112 B.T. (I)	86 129	63 88•	48 59•	38 42•	31 46	25 34•								Loads Shown are for Minimum Section Modulus Within Each Group						1′5″
158 B.T. (C) (I)	117	87 129	66 82•	52 57•	42 63	34 47•	29 36•	37												2′1″
168 B.T. (C) (I)			92 117•	73 83•	59 60•	49 68	41 52•	34 41•	30 33•	39	35	31								2′6″
178 B.T. (C) (I)				104	83 90•	69 101•	58 78•	49 60•	42 48•	37 40•	32 49	28 43	39	35						3′0″
200 B.T. (C) (I)					113 120•	93 137•	78 104•	67 82•	58 65•	50 53•	44 44•	39 60	35 53	31 48	43	39	36	33		3′6″
218 B.T. (C) (I) Spacing 2′9″						105 111•	89 127•	75 100•	65 80•	57 65•	50 54•	44 45•	39 59	35 53	32 48	43	40	36	33	3′9″
228 B.T. (C) (I) Spacing 2′9″								104	90 116•	80 94•	70 77•	61 64•	56 84	50 76	44 68	41 62	37 57	34 52	31 48	4′5″
258 B.T. (C) Spacing 2′9″-Min. Thickness=3″ Total										115	101	88	80 88•	72 74•	64 97	58 88	53 80	49 73	45 67	
20-lb. Rail (C) Spacing 2′9″-Min. Thickness=3″ Total														97	87	79	73	66	61	6′2″
30-lb. Rail (C) Spacing 2′9″-Min. Thickness=3″ Total																	126	116	106	8′3″

1. Loads to left of first heavy black line are less than 1/360. Loads between heavy black lines are over 1/360 but less than 1/240. Loads to right of second black line are over 1/240. Deflection based on $D = \frac{.00684\ Wl^4}{EI}$
2. Loads marked• are limited by deflection and are calculated by U.S.G.
3. To determine total safe load for bending moment of ⅛ Wl $\frac{WL^2}{8}$ use 80% of the tabulated load.
4. To determine total safe load for a maximum fiber stress of 18,000 psi, use 90% of tabulated load shown for 20,000 psi fiber stress.
5. For suspended ceilings use loads shown to the left of the first black line, or 75% of loads shown between black lines can generally be used.
6. For tee spacing of 24⅝″ multiply values shown by 1.327.
7. Values shown are for a total load of 45 pounds per square foot. Bending moment $M = \frac{1}{2} WL^2$ spaced as indicated.
8. Caution must be used in selecting sub-purlins for eave overhangs where heavy wood nailers, angles, gutters or soffits are supported by sub-purlins. Where these conditions are noted, the maximum eave overhang for a given sub-purlin must be checked by calculating the maximum moment developed, since loads applied beyond or at the end of the sub-purlin greatly increase the total moment. Deflection should also be taken into account on overhang designs.

Max. Bending Moment $M = fsS$

Safe uniform load: $W = \frac{2M}{L^2}$ (eave overhang)

Deflection eave overhang (assume uniform loading) $d = \frac{wL^4}{8EI}$

THERMAL INSULATION VALUES

DESCRIPTION	ACOUSTONE* 120 Mineral Acoustical Tile Ceiling (3)		ACOUSTONE "F" Mineral Acoustical Tile Ceiling (3)		Insulating ROCKLATH* Plaster Base On BRACE-TITE* System & Plaster Ceiling (3)		Insulating ⅝″ SHEETROCK* Gypsum Wallboard on DWC Channel System	
	SUMMER	WINTER	SUMMER	WINTER	SUMMER	WINTER	SUMMER	WINTER
2½″ SHEETROCK PYROFILL ROOF SLAB 2″ PYROFILL Gypsum Concrete Over ½″ SHEETROCK or ½″ Plastic Faced SHEETROCK	.09	.13	.16	.18	.11	.19	.12	.20
3″ U.S.G. INSULATION PYROFILL ROOF SLAB 2″ PYROFILL Over 1″ U.S.G. INSULATION FORMBOARD	.08	.10	.12	.12	.09	.13	.09	.14
3″ U.S.G. ACOUSTICAL PYROFILL ROOF SLAB 2″ PYROFILL Over 1″ ACOUSTICAL FORMBOARD	.08	.11	.12	.13	.09	.14	.09	.14
2½″ Asbestos Board PYROFILL ROOF SLAB 2¼″ PYROFILL Over ¼″ Asbestos Board	.09	.13	.17	.18	.13	.20	.13	.21

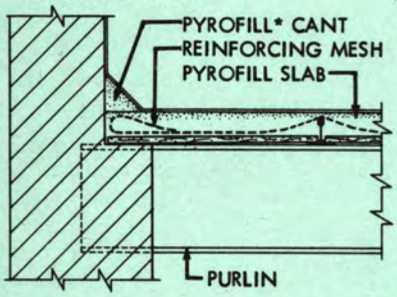
(3) Suspended ceiling and vented space, no added insulation.

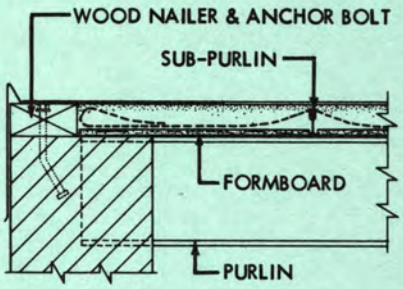
*T. M. Reg. U. S. Pat. Off.

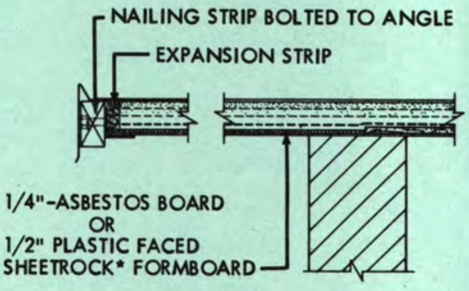
APPLICATION OVER BEAMS AND BAR JOISTS

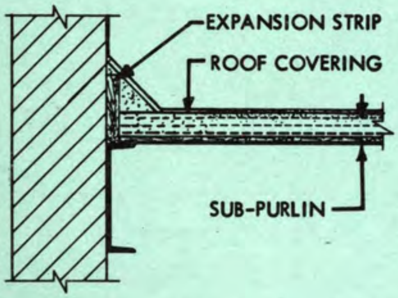
DETAILS **Scale ¾" = 1'-0"**

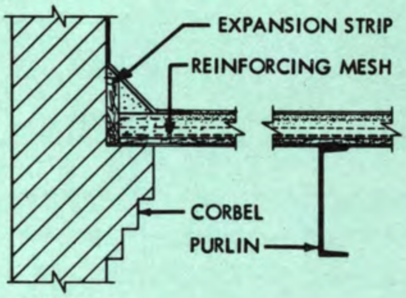
WALL DETAILS

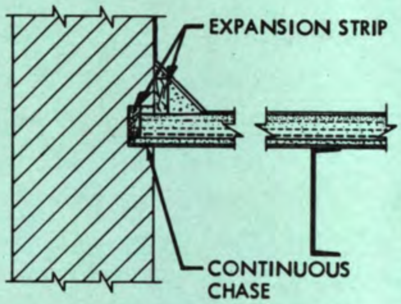




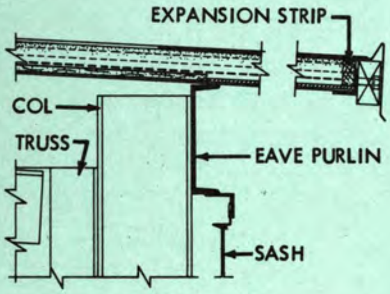


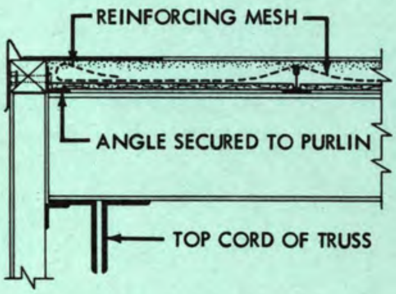


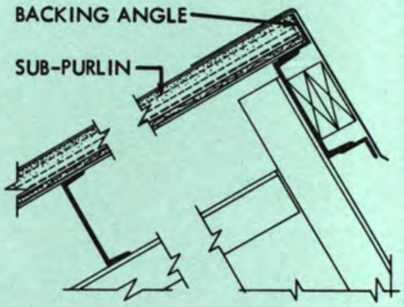




EAVES

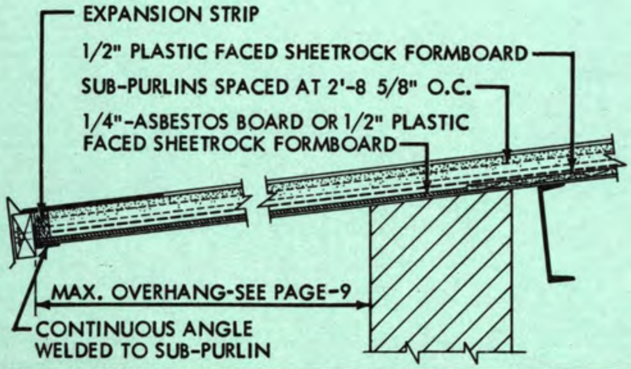


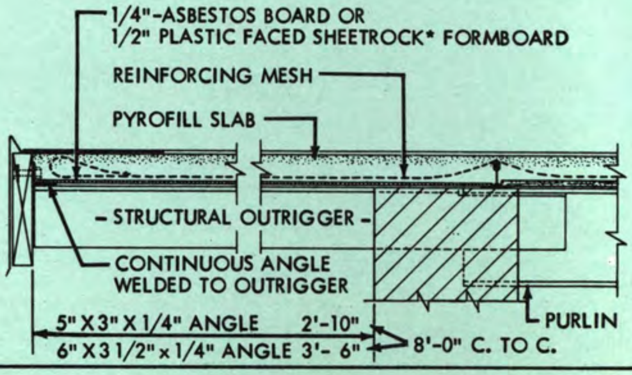




EAVE & GABLE OVERHANG

(OVERHANG BASED ON 45#/□' TOTAL LOAD)


EXPANSION STRIP
1/2" PLASTIC FACED SHEETROCK FORMBOARD
SUB-PURLINS SPACED AT 2'-8 5/8" O.C.
1/4"-ASBESTOS BOARD OR 1/2" PLASTIC
FACED SHEETROCK FORMBOARD
MAX. OVERHANG-SEE PAGE-9
CONTINUOUS ANGLE
WELDED TO SUB-PURLIN

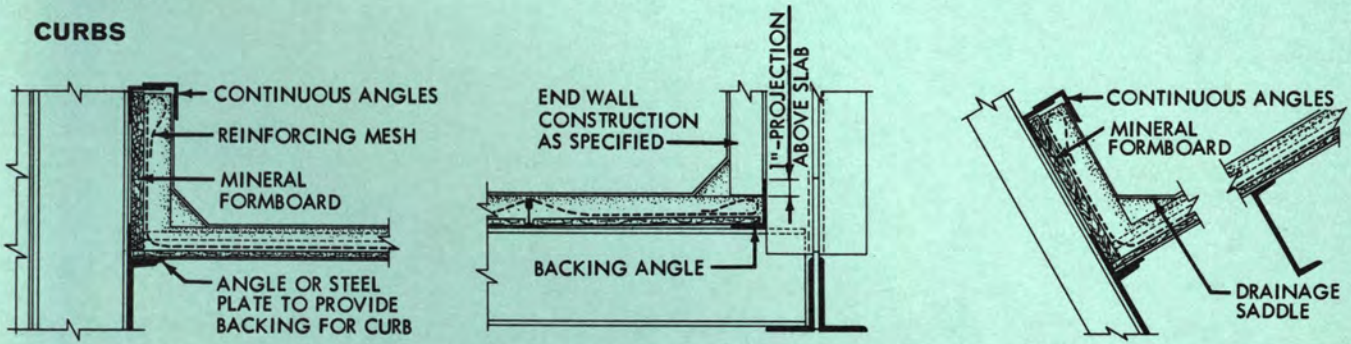


*T.M. Reg. U.S. Pat. Off.

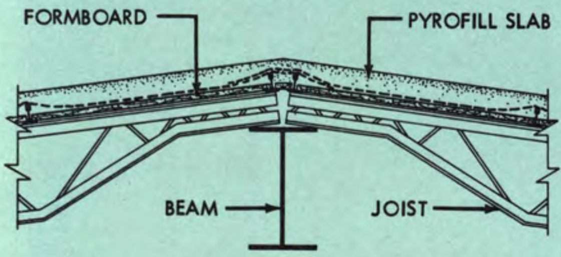
APPLICATION OVER BEAMS AND BAR JOISTS

DETAILS | **Scale ¾" = 1'-0"**

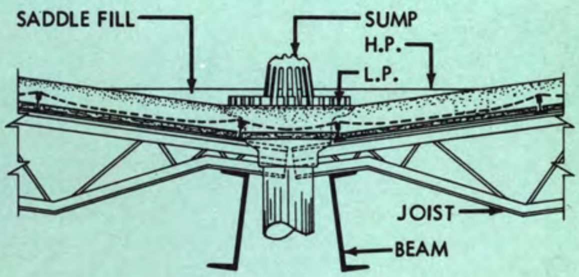
CURBS



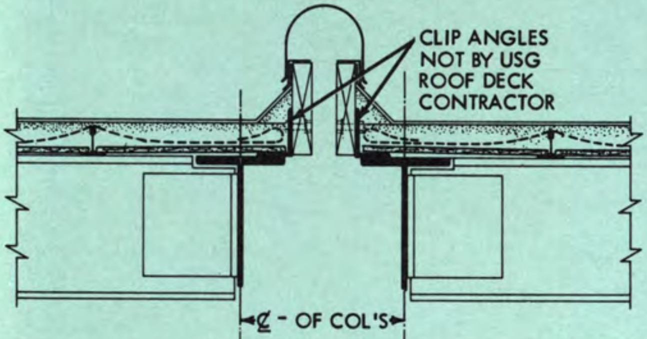
RIDGE DETAIL



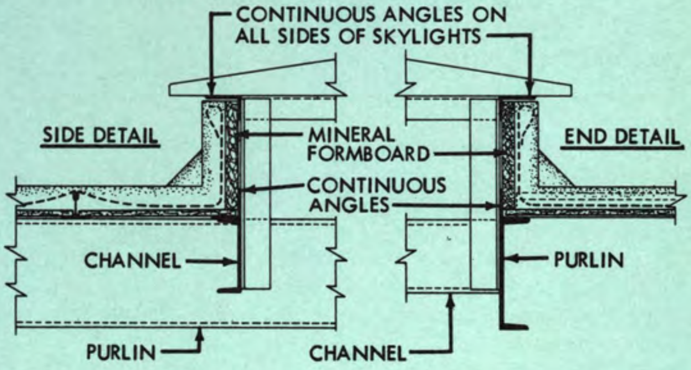
VALLEY DETAIL



EXPANSION JOINT

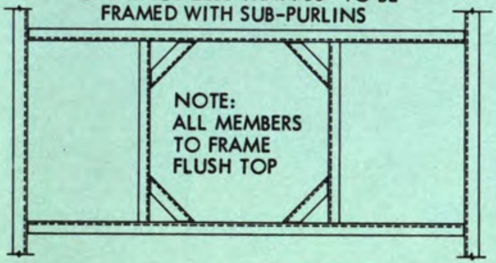


SKYLIGHT DETAIL



TYPICAL FRAMING AROUND OPENINGS LARGER THAN 30"

OPENINGS LESS THAN 30" TO BE FRAMED WITH SUB-PURLINS



NOTE:

ALL MISCELLANEOUS STRUCTURAL STEEL, SUCH AS CHANNELS AND ANGLES, ATTACHED TO ROOF FRAMING ARE NOT BY USG ROOF DECK CONTRACTOR

*T. M. Reg. U. S. Pat. Off.

SPECIFICATIONS | PYROFILL* GYPSUM ROOF DECKS

I. SCOPE OF WORK—The contractor shall furnish all labor, material and equipment and install completely in accordance with the manufacturers' recommendations the poured gypsum roof decks, together with cants, curbs and drainage fills as shown and specified. Approved shop drawings are required before work proceeds.

II. MATERIALS

1. **Steel Sub-Purlins**—Steel sub-purlins shall be an approved type capable of carrying the required dead load and live load, all to be cut to length and shop painted with one coat of an approved paint. All end joints are to bear on roof supports. Stagger the line of end joints.
2. **Formboards**—Permanent formboards shall be (select as required):
   a. USG ½″ treated Sheetrock* formboard 32″ wide, (for 48″ see page 3: design) in lengths equal to main purlin spacings.
   b. USG Plastic Faced Sheetrock Formboard ½″ x 32″ x 8′, treated.
   c. 1″ or ¾″ treated USG Insulation Formboard 32″ wide, in lengths equal to main purlin spacings.
   d. USG Acoustical Formboard, 1″ x 12″ x 24″, for sub-purlins spaced 24⅝″ on center.
   e. Asbestos cement board ¼″ x 32″ x 48″.
   f. Galvanized or painted sheet metal tees.
3. **Reinforcing Mesh**—Reinforcement in the poured gypsum slab shall be 48-1214 galvanized, welded wire mesh or Keydeck galvanized, woven wire mesh. The effective cross-sectional area of reinforcing mesh, at right angles to the sub purlins, shall not be less than 0.026 sq in. per sq. ft. of slab width.
4. **Gypsum Concrete**—Gypsum concrete shall be USG Pyrofill consisting of calcined gypsum and wood chips or shavings.

III. INSTALLATION

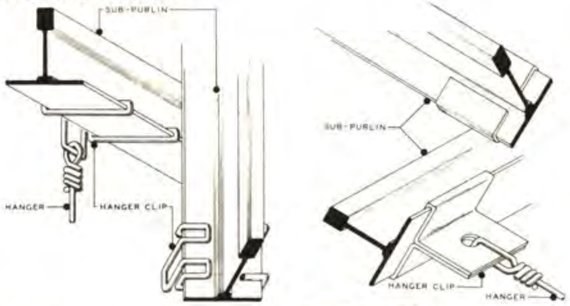
1. **Steel Sub-Purlins**—Place and weld each sub-purlin to main purlins at each contact point, using fillet welds ½″ minimum length placed on alternate sides of sub-purlins where accessible.
2. **Formboards**—Place formboards on sub-purlin flanges with all end or cross-joints supported, forms to fit neatly on all four edges. Cut forms to fit at walls, curbs and openings as required. Install approved sheet metal tees to support end joints of square edged formboards not supported by roof framing.
3. **Reinforcement**—Place 48-1214 reinforcing mesh with the 12 gauge wires at right angles to sub-purlins. If Keydeck is used, place 16 ga. wires at right angles to sub-purlins. Lap mesh ends at least 6 inches. Do not lap sides of mesh. Cut mesh to fit at wall, curbs and openings, and carry mesh into all areas where Pyrofill is poured.
4. **Gypsum concrete**—Mix Pyrofill with clean water only, as directed on bags. Pour over formboards to minimum depth of 2 inches. Screed all surfaces to a smooth, even plane ready to receive waterproof roof covering specified in another section. Pour cants, curbs and drainage fills as shown or required. After pouring, leave roof deck free and clean for other trades.

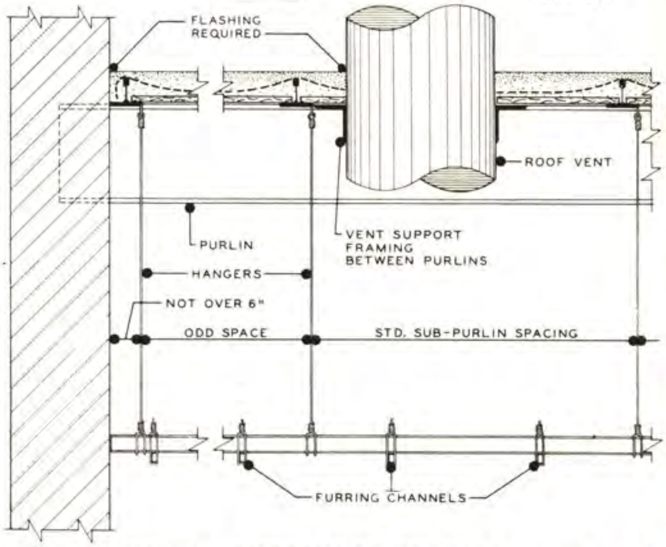
Notes to Architect. Expansion joints should also be provided in the roof deck if they are provided in the main structure.

Where resistance to uplift forces is required, the bulb tee, trussed tee and ASCE type sub-purlins are most effective. Other types may require supplementary anchorage.

Where suspended ceilings are required, USG recommends that they be hung from the main purlins wherever economically feasible. If they are hung from the roof deck, the hangers should be attached to the sub-purlins, never to the gypsum slab itself. The added weight of the suspended ceiling affects sub-purlin size.

HANGER DETAILS

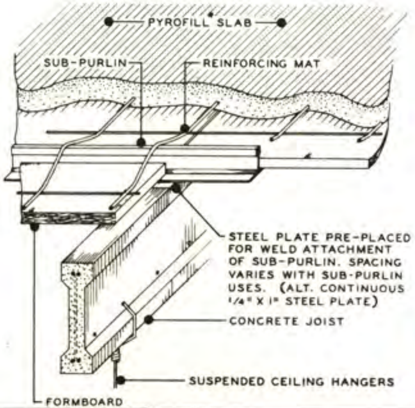




ATTACHMENT HANGERS & CHANNEL GRILLAGE NOT BY USG* ROOF DECK CONTRACTOR

SUSPENDED CEILINGS NO SCALE

PYROFILL DECK ATTACHMENTS ROOF JOISTS TO CONCRETE


PYROFILL SLAB
SUB-PURLIN
REINFORCING MAT
STEEL PLATE PRE-PLACED FOR WELD ATTACHMENT OF SUB-PURLIN. SPACING VARIES WITH SUB-PURLIN USES. (ALT. CONTINUOUS 1/4" X 1" STEEL PLATE)
CONCRETE JOIST
SUSPENDED CEILING HANGERS
FORMBOARD

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*T.M. Reg. U.S. Pat. Off.

A.I.A. File 4-E-6

TECHNICAL INFORMATION

USG® METAL EDGE GYPSUM PLANK

UNITED STATES GYPSUM

1964

UNITED STATES GYPSUM

A.I.A. File 4-E-6

METAL EDGE GYPSUM ROOF PLANK

NAIL HOLDING POWER

(Tests conducted at USG Research Laboratories)

Type of Roofing	Description of Nail	Holding Power Dry Plank— 1½" Penetration
Built Up	1¾" LaBalle Square Cut	150 lbs.
	1¾" Independent Screw-Tite Square-hed	46 lbs.
	1½" Galv. Roofing Nail (1¼" Penetration)	25 lbs.
Shingles & Tile	Bright Smooth 9 gauge	107 lbs.
	Galvanized Smooth 9 gauge	80 lbs.
	Bronze Smooth Round 9 gauge	68 lbs.

THERMAL INSULATION VALUES

"U" Factor for complete roof slab including built-up roof covering (Btu per sq. ft., per hr., per deg. F. diff. in temperature)

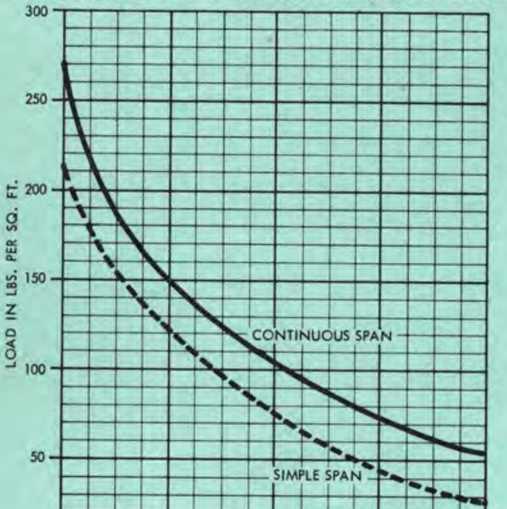
	Winter	Summer
Plank without added insulation	—0.51 Btu	.43
Plank with ½" added insulation	—0.30 Btu	.27
Plank with 1" added insulation	—0.21 Btu	.20

Note: The insulation considered is a rigid type wood fiber board (such as USG Roof Deck Insulation) with a "k" factor of .36

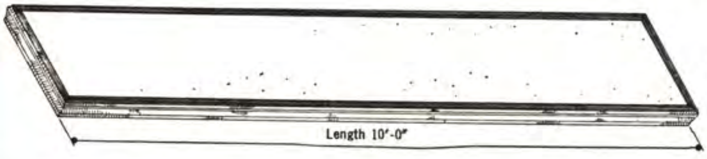
DESIGN PROPERTIES

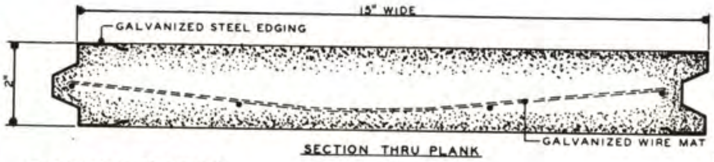
The graph below indicates the allowable uniformly distributed loads that can be superimposed on U.S.G. Metal Edge Plank supported on various joist spacings. No load indicated on the graph will induce deflection greater than 1/240 of the span nor exceed a design stress of 20,000 psi in the metal edging. Load carrying capacities are shown for simple and continuous span conditions.

ALLOWABLE UNIFORM SUPERIMPOSED LOADS



Maximum allowable bending stress in metal edging is 20,000 psi based on simple span bending moment at $wl^2/8$, bending moment for spans greater than 5'0" of $wl^2/8$, and bending moment for spans less than 5'0" of $wl^2/10$. Deflections are limited to 1/240 of the span and based on deflection constants of 0.013 wl^4/EI for simple spans, 0.0068 wl^4/EI for continuous spans less than 5'0", and 0.0054 wl^4/EI for continuous spans of 5'0" and greater. Contact your U. S. Gypsum representative for information on high concentrated loads.





SECTION THRU PLANK

DESCRIPTION

USG Metal Edge Gypsum Plank is a precast structural roof deck unit 2 inches thick, 15 inches wide, and 10 feet long which weighs approximately 10.5 pounds per square foot. Reinforced with 22 gauge galvanized steel tongue and groove edges and a 16 gauge galvanized wire mat, the unit is designed to span a maximum of 7 feet under normal design roof loads. Conforms to Federal Specifications SS-S-439 and ASTM C377-56T.

FUNCTION AND UTILITY

Interlocking Tongue and Groove. The accurately formed interlocking edges mate with adjacent plank, distributing the load. This design permits plank ends to occur off supports, and uniform spacing of roof purlins is therefore unnecessary.

Ease of Erection. The large size and interlocking edges permit easy, fast construction.

Winter Construction. Because the units are precast and laid without grout, winter delays are avoided.

Nailable—The gypsum provides adequate nail holding power for nailing asphalt, asbestos, slate and clay tile shingles. Care should be taken in selecting a nail which will insure as nearly as possible the 1½" maximum recommended penetration into the plank. (See data table on this page.)

Adaptability. USG Metal Edge Plank can be used on flat, pitched, and curved roofs, provided the radius of the curve exceeds 150 feet.

Lateral & Uplift Resistance. Laboratory tests show standard attachment clips are capable of supporting lateral loads up to 2100 pounds per clip. The clip will resist uplift loads of 470 pounds per clip.

RECOMMENDATIONS—LIMITATIONS OF USE

Job Protection. During job storage, gypsum plank should be protected from exposure to rain and snow. Handle and store on edge. Use temporary wood planking over gypsum plank areas exposed to repetitive impact or wheel loads during construction.

Roof Covering. Apply built-up roof covering in accordance with roofing manufacturers' specifications as soon as possible after installation of gypsum plank. The recommended application of roofing to Metal Edge Gypsum Plank is by nailing the first sheet dry using nails providing a minimum penetration of 1¼" (no more than 1½") into the slab. If roofing is mopped on precautions

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should be taken to prevent leakage of pitch or asphalt through joints in the plank. Apply asphalt, asbestos or light slate shingles in accordance with manufacturers recommendations.

A single ply coated base sheet underlayment is recommended.

Excessive Moisture. Gypsum plank roofs are practical for all buildings having normal humidity conditions. Whenever continuous high humidity is anticipated, such as in wet process plants, consult the nearest USG Sales Office for recommendations.

High Temperature. Gypsum plank for roofs or floors perform satisfactorily on buildings exposing them to normal or moderately high temperatures. Where unusually high temperatures are expected, such as in foundries, furnace rooms, over breechings, etc., consult the nearest USG Sales Office for recommendations.

Steep Roofs. Gypsum plank can be used satisfactorily on steeply pitched roofs if precautions are taken to prevent thrust accumulation. See "e" under "erection".

Venting of Enclosed Spaces. All enclosed spaces beneath roof decks should be adequately vented to the outside. Such venting by small louvers or openings does not appreciably affect attic temperatures. Please refer to *Heating, Ventilating, Air Conditioning Guide*, published annually by the American Society of Heating and Air Conditioning Engineers for complete information on venting of attic spaces (Chapters 10 and 12).

SPECIFICATIONS

Scope. Unless otherwise shown on plans, all roof areas shall be covered with gypsum plank, and all curbs, cants, saddles, etc., shall be as shown or specified herein.

Materials. *Gypsum plank* shall be 2″ x 15″ x 10′0″ metal edge gypsum plank, manufactured by United States Gypsum Company.

Clips and nails. The manufacturer of the gypsum plank shall furnish standard galvanized clips for attachment to main purlins, (200 clips per 1000 sq. ft.). Nails (2 per clip) shall be 4d galvanized slaters or 1″ smooth shank No. 11 ga. galvanized roofing nails.

Cants and saddles shall be formed of PYROFILL* gypsum concrete manufactured by United States Gypsum Company.

SPECIAL FORMING

Ridges and Hips. Fill joints at ridges and hips with mortar consisting of USG Gypsum Grouting Cement and sand mixed in the proportion of 1 part cement to 2 parts clean sharp sand by volume.

Cants and Drainage Fills. All curbs, cants, drainage saddles, etc., shall be installed as indicated or required using PYROFILL Gypsum concrete mixed with clean water only in the proportion of 8 gallons of water to each 80 lb. bag of PYROFILL.

Painting. Plank must be dry before painting with sealing type oil or latex base paints. Galvanized edging must be freed from grease or oil by cleaning with mineral spirits or a similar solvent.

Edging can be painted with a zinc dust metal primer of the type meeting Federal Specification TTP—641—b, dated 1-23-53, Type II.

Seal gypsum surfaces with TEXOLITE* Vinyl Sealer or SHEETROCK* Sealer.

Allow metal primer and Sealer to dry. Apply one or two coats of GRAND PRIZE* latex paint, oil paint, or alkyd flat paint. If it is necessary to paint before plank is dry, prime metal edging as above: Paint edging and gypsum with TEXOLITE* Standard casein paint which has been reinforced by additional fungicide such as 1½ oz. Dowicide "G" per gallon of paste.

ERECTION

Placing of Plank. Start laying plank at one corner of each independent area.

All plank shall be laid dry with marked side up and with the GROOVE side advancing. Plank shall be placed on supporting steel with joints tightly interlocked.

Where no wall supports are provided along the longitudinal edge of the starting and final rows of plank, plank in these rows shall be cut so that end joints occur over roof supports. (When supports are provided along the wall, end joints may occur off the supports.)

End joints in adjacent rows shall be staggered not less than 30 inches. Alternate rows shall be started with full units or cut pieces long enough to have bearing at not less than two supports. End of rows shall be finished similarly. The remaining rows can be started (or finished) with cut plank long enough to have not less than one support. Cut plank to fit at walls, ridges, valleys and around openings as indicated or required.

Anchorage of Plank To Supports. Each plank shall be anchored to supporting members by the following method:

a. Steel Purlins—Use one galvanized clip at every point of support; where span is 3′-6″ or less, use clip on alternate supports. Where possible, alternate position of clips so that each clip is facing in opposite direction to the next one. Secure each clip to plank with 2 nails.

b. Steel Purlins—Weld metal edging of plank to supports by flowing weld from the support to the plank edging being careful not to burn holes in the edging.

c. Concrete Joists—Use power driven studs fired through the plank, 2 studs per plank at each intersection, with penetration into the joist adequate for secure attachment. If steel plates are imbedded in concrete joists use method in (b) above.

d. Wood Joists—Use two 16 penny nails at each intersection of plank with purlin. Drive nails so that their heads are flush with the top surface of the plank.

e. For pitches greater than 30°, standard #91 anchor clip attachment should be employed plus additional anchorage provided by ½″ standard bolts spaced one per 30 square feet of roof area. See detail on next page.

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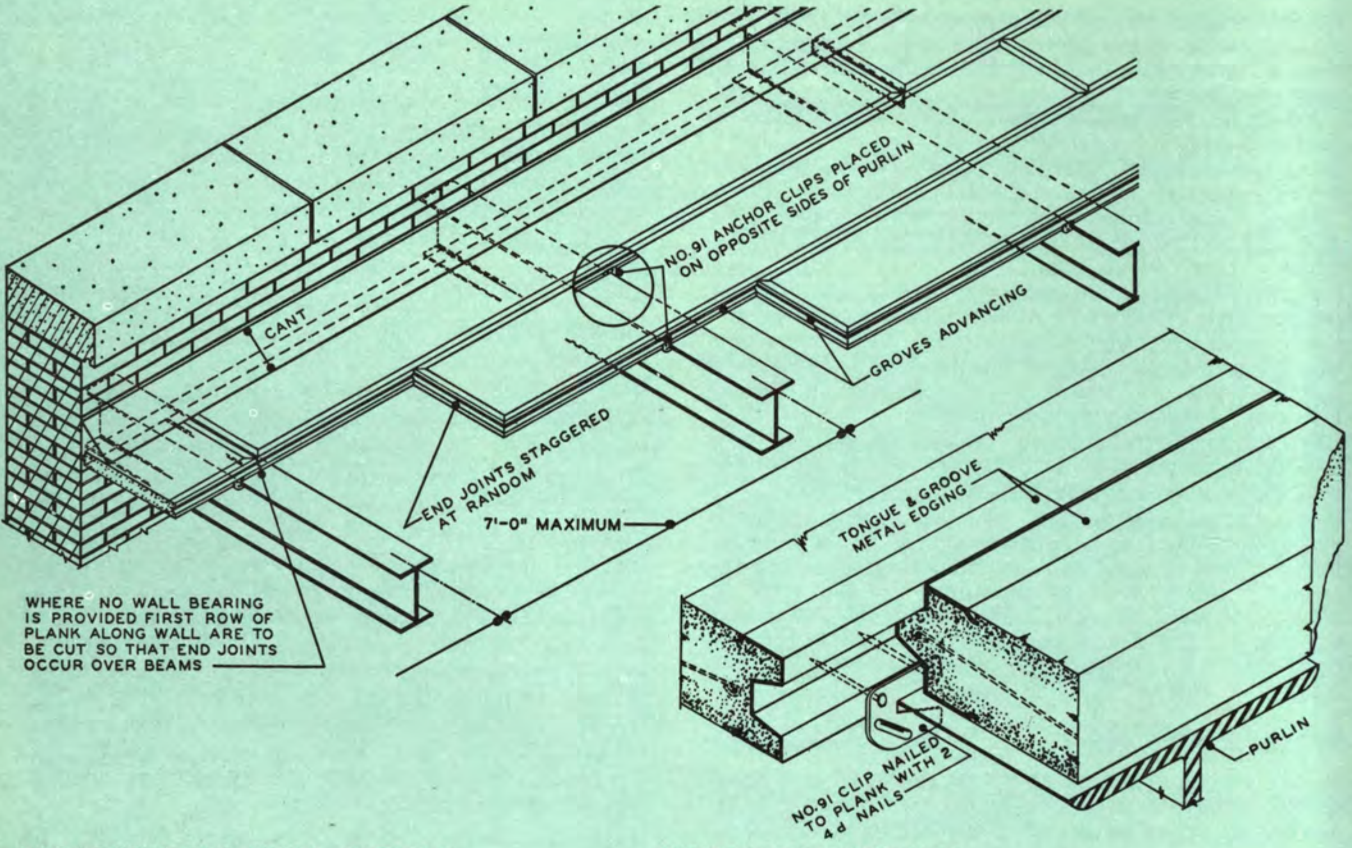
*T.M. Reg. U.S. Pat. Off

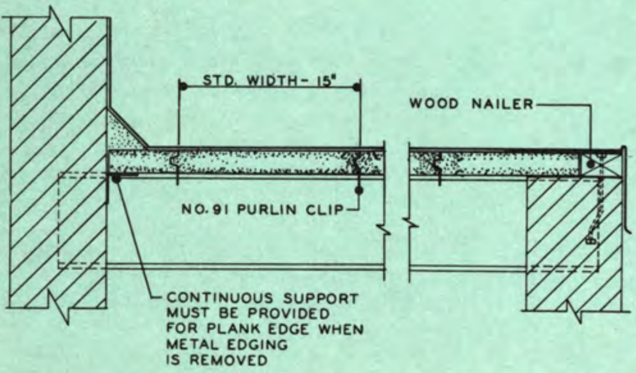
• Since methods and conditions of application and use are beyond our control, the United States Gypsum Company will not be responsible for failure of its products when not used according to directions and specifications.

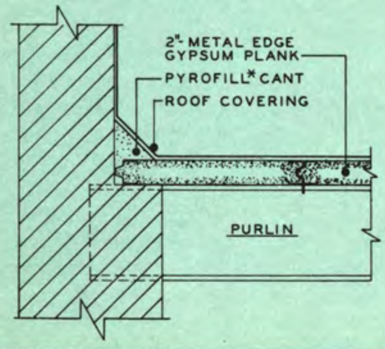
METAL EDGE
GYPSUM ROOF PLANK


NO.91 ANCHOR CLIPS PLACED ON OPPOSITE SIDES OF PURLIN
CANT
GROVES ADVANCING
END JOINTS STAGGERED AT RANDOM
7'-0" MAXIMUM
TONGUE & GROOVE METAL EDGING
PURLIN
NO.91 CLIP NAILED TO PLANK WITH 2 4d NAILS
WHERE NO WALL BEARING IS PROVIDED FIRST ROW OF PLANK ALONG WALL ARE TO BE CUT SO THAT END JOINTS OCCUR OVER BEAMS

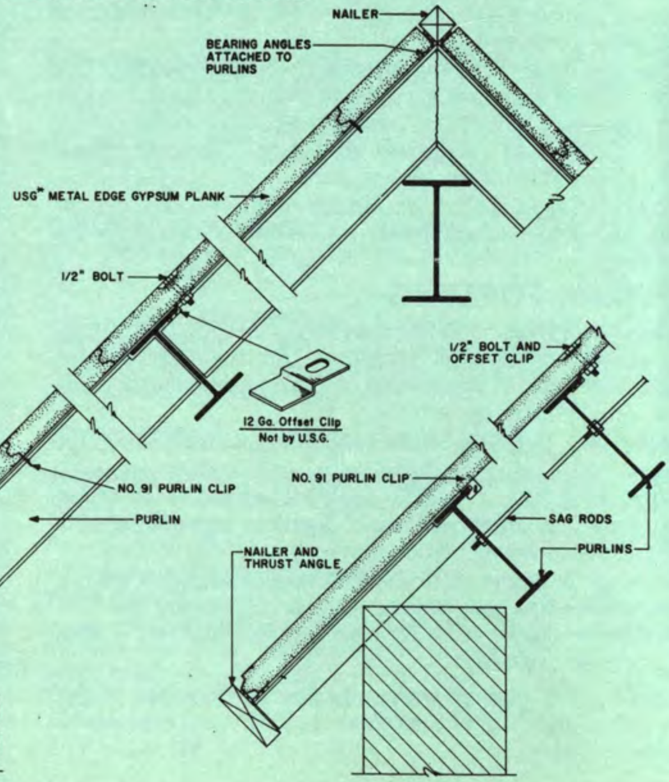
PARAPET & END WALL DETAILS

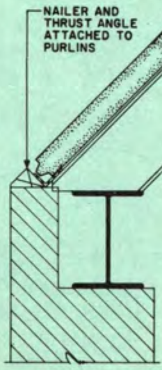
SCALE: 3/4" = 1'-0"


STD. WIDTH - 15"
WOOD NAILER
NO. 91 PURLIN CLIP
CONTINUOUS SUPPORT MUST BE PROVIDED FOR PLANK EDGE WHEN METAL EDGING IS REMOVED



STEEP PITCH DETAILS





AIA FILE 12-C 4-L 13-C

TECHNICAL INFORMATION

USG®
STEEL ROOF DECK

UNITED STATES GYPSUM

1962

UNITED STATES GYPSUM

AIA FILE 12-C 4-L 13-C

USG
STEEL ROOF DECK

METAL
ROOF DECK
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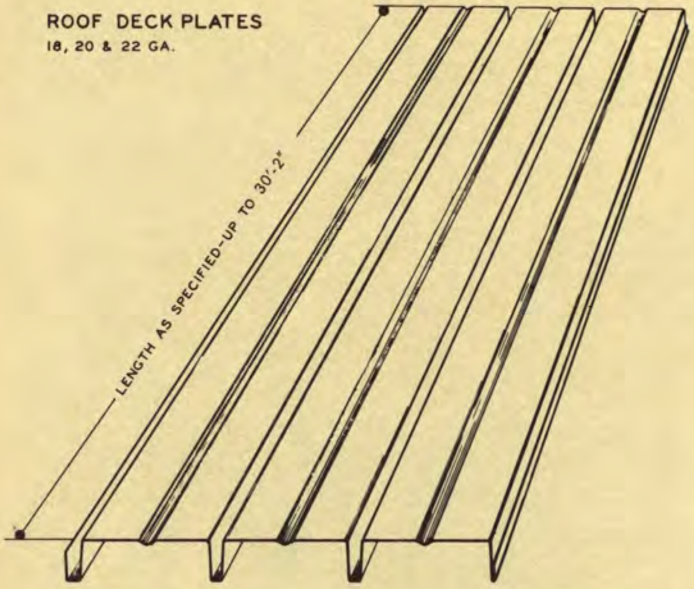
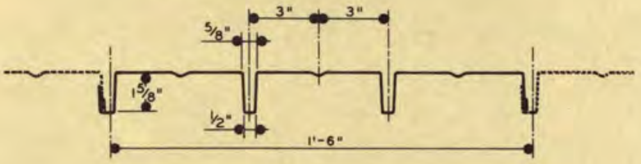
TECHNICAL
INSTITUTE

Member

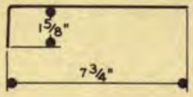
ROOF DECK PLATES
18, 20 & 22 GA.



STANDARD STEEL
ROOF DECK PLATE



TYPICAL CROSS SECTION
THRU ROOF DECK PLATE



FILLER PLATE

DESCRIPTION

USG Steel Roof Decks are prefabricated units, formed by cold rolling low carbon steel sheets into ribbed type interlocking panels, ready for installation as they come to the job. USG Steel Roof Deck, ribbed panels, are made 18 inches wide, with nominally 1½″ deep ribs, and in standard lengths from 5′8″ to 30′–2″ inclusive, in ½″ increments. Each roof deck panel is shop painted light-tone gray by spray coating with a baked on rust inhibitive paint.

USG Steel Roof Deck panels are available in No. 18, No. 20 or No. 22 U. S. Standard gauges shop painted or galvanized.

All essential accessories such as ridge and valley plates, cover plates, cants, curbs, sump pans or plates are also available in the same shop painted or galvanized steel as shown in detailed drawings.

USG Steel Roof Deck is manufactured in accordance with the Standards and Specifications of the Metal Roof Deck Technical Institute.

FUNCTION AND UTILITY

Light Weight: USG No. 18 gauge painted steel roof deck, ribbed panels, weigh approximately 309 pounds per 100 sq. ft. of roof area, No. 20 gauge approximately 230 pounds, and No. 22 gauge approximately 196 pounds—galvanized slightly more. This light dead load permits savings in the structural steel framing.

Strength: All of the high strength of steel is used to advantage in the ribbed design of USG Steel Roof Decks. A stiffening bead is formed in the top flange between the ribs to resist warping or buckling under concentrated loads.

A table of safe total loads in pounds per sq. ft., the weight per square, the moment of inertia (I''^4), the section modulus (S''^3) and the insulation values, "U" for the complete roof including built up roof covering, is shown in the Technical Data on the opposite page.

Fire Resistance: USG Steel Roof Decks cannot burn or otherwise support combustion. For fire resistance ratings, see page three.

Durability: USG Steel Roof Decks are painted with a prime coat of rust inhibitive Gray Green paint, baked on to give high resistance to moisture and provide additional safety against damaging rust and corrosion.

Adaptability: USG Steel Roof Decks are ideal on flat, warped and low pitched roofs. Insulation and built-up roof coverings are required.

Appearance: The painted surfaces of the deck plates and accessories, and the repeating rib pattern can provide a pleasing light reflective undersurface.

Maintenance: The prime coat gives a tough hard surface which can be washed or repainted as maintenance requires.

Low Cost: Material costs are low. Speed of erection results in low labor costs. Light dead load conserves structural steel.

LIMITATIONS OF USE

Insulation: A rigid type of insulation is required over steel roof decks under the built-up roof covering.

Acid Fumes, Excessive Temperature and Moisture Conditions: Special consideration must be given before using steel roof decks when they are exposed to:

1. Acid or acid fumes detrimental to paint or steel.
2. Excessive temperature.
3. Excessive moisture or humidity conditions.

For further information consult our nearest Industrial Sales Engineer or Architect Service Representative.

Venting of Enclosed Spaces: All enclosed spaces beneath roof decks should be adequately vented to the outside. Such venting by small louvers or openings does not appreciably effect attic temperatures. Please refer to *Heating, Ventilating, Air Conditioning Guide*, published annually by the American Society of Heating and Air Conditioning Engineers for information on venting of attic spaces. (Chapters 10 & 12).

Cantilever for Rakes and Eaves: Where maximum unsupported overhang for USG Steel Roof Deck exceeds 18″, consult the nearest U.S.G. Sales Office for recommendations.

TECHNICAL DATA

Type of Span	GA.	SAFE TOTAL LOADS IN LBS. PER SQ. FT. — PURLIN SPACING 5′0″	5′6″	6′0″	6′6″	7′0″	7′6″	8′0″	8′6″	9′0″	9′6″	10′0″
Continuous	18	154	126	106	95	78	68	59	53	47	42	37
	20	114	94	79	67	58	51	44	39	35	31	27
	22	98	81	68	58	50	42	38	33	30	27	
Two Span	18	125	103	87	74	63	55	48	43	38	34	31
	20	92	76	63	54	46	40	35	31	28		
	22	78	64	54	46	40	34	30	27			
Simple	18	125	103	87	74	61	51	43	37	32	28	
	20	92	76	63	53	44	37	31	27			
	22	78	64	54	45	37	31	27				

PROPERTIES

Type	Wt. Lbs. Per Sq.		I″^{4}	S″^{3}
	Black	Galv.		
18	309	345	.285	.235
20	230	265	.197	.171
22	196	225	.162	.147

Insulation—"U" Value

Btu/hr./s′f/°F Diff.—INCLUDING ROOFING

None	½″†	1″†	1½″†
0.90	0.39	0.24	0.18

†Fiberboard Insul—K = .33 over steel deck

NOTE: None of these loads will produce a stress greater than 20,000 psi or a deflection due to live load greater than 1/240 of the span. A 6 psf dead load representing the weight of the deck, insulation, roofing, etc., was subtracted from total loads when determining deflections. Safe load determinations are in accordance with AISC Specification for the Design of Light Gage Cold Formed Steel Structural Members (1960 Edition). A moment coefficient of 1/10 has been used for 3 or more spans, and ⅛ for two spans and simple span.

FIRE-RESISTANCE RATINGS—STEEL ROOF DECK CONSTRUCTION

Roof Materials Applied Over Steel Roof Deck	Suspended Ceilings of Metal Lath & Plaster	Rire Resistance Ratings	Authority
(a) 2″ Vermiculite concrete (or equivalent)	1″ Vermiculite—gypsum plaster on metal or wire lath	4 hrs.	National Bureau Standards Test No. 60, 1/31/49 Report No. TR 10235-2FP 2688
(b) Minimum 1¾″ insulation board of shredded wood, bonded with portland cement	1″ Vermiculite—gypsum plaster on metal or wire lath	3½ hrs.	
(c) Minimum 1″ insulation as described in item (b) above	1″ Vermiculite—gypsum plaster on metal or wire lath	3 hrs.	
(d) Minimum 1″ insulation board of felted glass fiber	1″ Vermiculite—gypsum plaster on metal or wire lath	2 hrs.	
(e) Minimum 1½″ wood fiber board insulation	1″ sanded gypsum plaster 1:2 mix	2 hrs.	N.B.S. Test No. 58 11/29/46
(f) Minimum 1½″ wood fiber and cement binder insulation	⅞″ sanded gypsum plaster 1:2 mix	2 hrs.	N.B.S. Test No. 56 11/27/45
(g) Minimum 1″ wood fiber board insulation	¾″ sanded gypsum plaster 1:2, 1:3 mix	1½ hrs.	N.B.S. Test No. 57 1/15/46

ARCHITECTURAL SPECIFICATIONS

General—All principal roof framing, including trusses, purlins, beams, framing around openings larger than 12″ in diameter, and all trimming at curbs, sills, and walls, will be done by others. See Specifications for Structural Steel.

SCOPE

Unless otherwise specified, all roof areas are to be covered with USG Steel Roof Deck. All deck is to be left complete, ready for application of the roof insulation and built-up roofing.

MATERIALS

Roof Deck Plates—Shall be of (No. 18) (No. 20) (No. 22) gauge steel having nominal 1½″ deep ribs, 6″ on centers, and made in units 18″ wide by lengths to fit purlin spaces and shall be manufactured by United States Gypsum Company.

Accessories—All cant strips, ridge and valley plates, utility angles and cover plates, etc., as indicated, shall be 20 gauge, unless otherwise specified, steel fabricated to sizes and shapes indicated and shall be manufactured by United States Gypsum Company.

Curbs—Shall be of No. 18 gauge steel, unless otherwise specified, (Roof Deck Plates) (Sheets formed to sizes and shapes indicated).

Optional—Sump Plates where indicated shall be fabricated of 14 gauge steel sheets according to manufacturers' standards.

Paint—All USG Steel Roof Deck plates and sheet metal accessories, etc., are to have one shop coat of rust inhibitive paint, applied at the factory and oven baked to protect the steel during shipment.

ERECTION

All USG Steel Roof Deck plates and accessories are to be installed by welding in accordance with directions and placing diagrams furnished by the manufacturer, or steel deck contractor.

Optional—For use of clips in lieu of welding:

All USG Steel Roof Deck plates and accessories shall be installed with clips in accordance with directions and placing diagrams furnished by the manufacturer, or steel deck contractor.

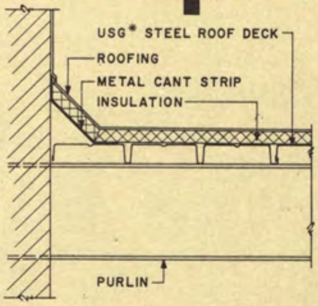
Notes to Architect:

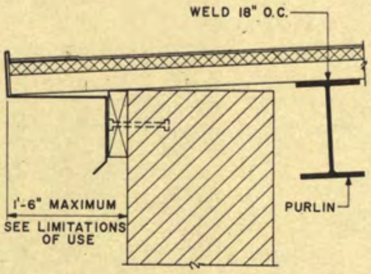
1. When USG Steel Roof Deck is installed by welding, it may also be advisable to use spacer wedges. When pitch of roof is 3″ in 12″ or greater, anchorage clips for insulation are recommended.

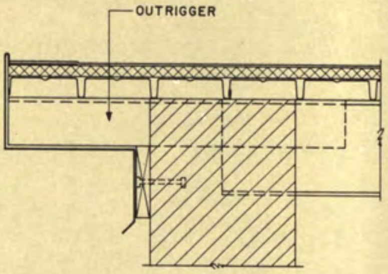
2. Galvanized steel decks (unpainted) No. 18, 20, or 22 gauge are available on specification.

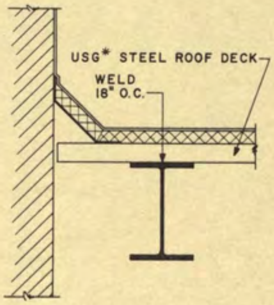
USG
STEEL ROOF DECK

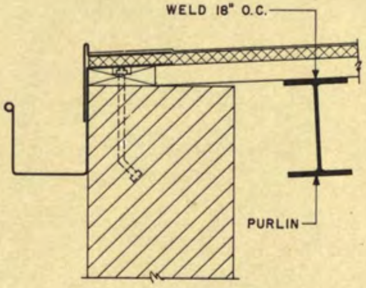
WALL DETAILS | Scale ¾″ = 1′-0″

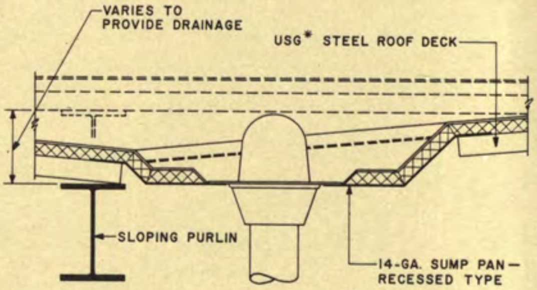








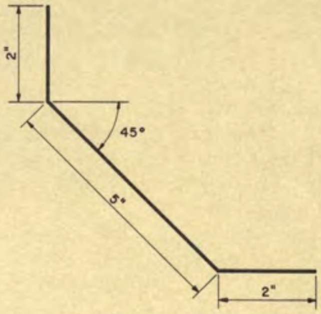




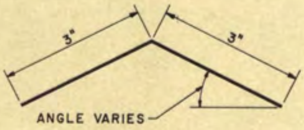
ROOF SUMP DETAIL

ACCESSORIES

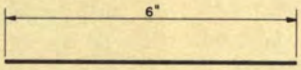
MAX. FAB. LENGTH 10'-0"



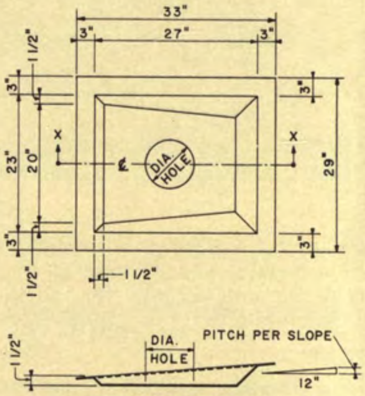
METAL CANT STRIP
20-GA.



RIDGE OR VALLEY PLATE
20-GA.



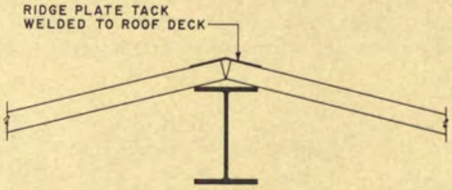
COVER PLATE
20-GA.



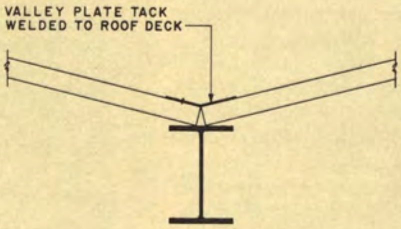
SECTION-XX

SUMP PAN-RECESS TYPE
14-GA.

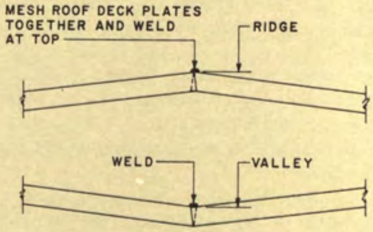
MISCELLANEOUS DETAILS



RIDGE DETAIL



VALLEY DETAIL



RIDGE & VALLEY DETAILS
WHERE SLOPE IS LESS THAN 1" PER 1'-0"

*T.M. Reg. U.S. Pat. Off.

AIA File 3-C

TECHNICAL INFORMATION

LIME

FOR MASONRY MORTAR

UNITED STATES GYPSUM

1961

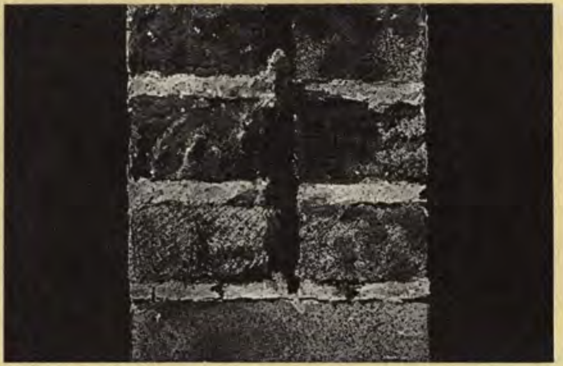
UNITED
STATES
GYPSUM

AIA File 3-C

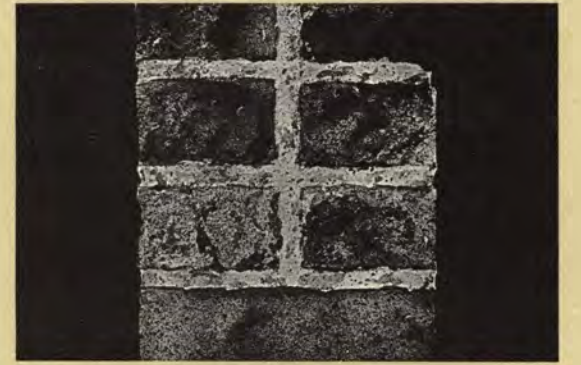
LIME FOR MASONRY MORTAR

A good mortar spreads easily and resists suction of brick.

A plastic mortar flows with light pressure and encourages good workmanship.



Harsh mortar is conducive to poor workmanship and unfilled joints.



Good mortar encourages good workmanship and well filled joints.

BASIC REQUIREMENTS OF SOUND MASONRY CONSTRUCTION

Good masonry walls are expected to be water and weather resistant and durable with a minimum of maintenance. The essential factors in obtaining such results are:

Sound Masonry Units

With moderate rate of water absorption (suction) and good dimensional stability.

Proper Workmanship

Full and properly tooled joints. Proper workmanship is attainable only with a high quality mortar.

High Quality Mortar

With highly plastic working qualities to insure proper filling of all joints, with high water retention to insure strong and complete bond, with adequate strength, elasticity, weather resistance and with low volume change.

FUNCTIONS OF LIME IN MASONRY MORTAR

High Plasticity

Highly plastic limes impart smooth working qualities to masonry mortar, resulting in more complete filling of joints, more intimate contact and better "keying" between mortar and masonry units, and superior mortar bond. Plasticity is measured by the Emley Plasticimeter.

High Water Retentivity

The lime content of masonry mortar increases water retentivity, which means better mortar bond as well as less retempering of mortar during use.

Strong and Complete Bond

The superior mortar bond of a high quality lime mortar reduces the possibility of leaky walls and efflorescence.

Adequate Strength

An ideal mortar possesses sufficient compressive and tensile strength to insure structural integrity of the wall, without being so strong that it becomes rigid and brittle. The National Bureau of Standards sets the limits for desirable mortar compressive strength between 750 and 1000 p.s.i. after 28 days. (N.B.S. Circular No. 30). Lime mortars possess adequate strengths to meet all normal building requirements. (See Technical Data, page 4.)

Elasticity

High lime mortars show far greater elasticity than brittle mortars that are excessively strong and hard. Thus, high lime mortars show superior crack resistance when walls are deflected by lateral (wind) pressures.

Weather Resistance

The characteristics of highlime mortars enumerated above, all of which result in a more complete and permanent contact between the mortar and the masonry unit, insure tight mortar joints. This prevents the penetration of water and its disruptive effects. Lime mortars also demonstrate "autogenous healing", due to the properties of the lime, which enables lime mortar to "reknit" itself to fill voids or small cracks. Wetting and drying cycles accelerate the gain in strength of lime mortars which continues for a period of years.

ECONOMIES OF LIME MORTARS

(a) Mortars having the above characteristics are conductive to rapid, easy, economical, and neat workmanship.
(b) Minimum droppings—Minimum mortar waste.
(c) Low maintenance cost.
(d) Lime mortars, because of their high volume and excellent sand-carrying capacity, are the most economical from the standpoint of material cost.

"MORTASEAL"* and "RED TOP"* are registered trademarks owned by United States Gypsum and are used by it to distinguish its products. "MORTASEAL" identifies the particular hydrated lime; "RED TOP" identifies the particular hydrate or high calcium quicklime and other building products manufactured only by United States Gypsum.

MORTASEAL* LIME

DESCRIPTION

MORTASEAL (Genoa, Ohio Mill) is a double hydrated Ohio dolomitic lime, and MORTASEAL (Farnams, Mass. Mill) is a quick-soaking, hydrated, high calcium lime (both less than 8 per cent unhydrated oxides). They meet the following specifications: A.S.T.M. C207, Type S; Federal Specification SS-L-351, Type M, including the added requirement of not more than 8% unhydrated oxides; National Lime Association Type S.

FUNCTION AND UTILITY

MORTASEAL lime qualifies most readily with all "Functions of Lime in Masonry Mortar" described on preceding page as follows:

Plasticity—MORTASEAL develops exceptional plasticity and workability immediately upon mixing with water—either by machine or by hand. This permits a mortar of exceptional working qualities that is conducive to good workmanship and water resistant joints.

High Water Retentivity—Mortar mixes of 1:2½:9 with MORTASEAL lime, as shown in data table, produced the unusually high "flow after suction" (water retentivity) of 93 per cent."

(a) Exhibits superior working qualities regardless of high or uneven suction.

(b) Conducive to a more complete, strong, uniform bond with masonry units.

(c) Decreases need for retempering.

Low Volume Change—Because of the 92 per cent hydration of MORTASEAL, volume change due to unhydrated material is negligible.

Ease of Mixing—MORTASEAL lime requires no soaking or slaking; it is ready for use immediately after mixing with water.

Adequate Strength: A 1:2½:9 mix of Portland cement, MORTASEAL and sand complies with A.S.T.M. strength requirements for Type N mortar (750 pounds per square inch at 28 days). See Data page 4.

Lower in Cost because:

(a) No soaking or slaking required.
(b) High sand-carrying capacity.
(c) Minimum labor required to mix or apply.
(d) Less need to retemper.
(e) Less need to wet masonry units.
(f) A 1:2½:9 MORTASEAL mix is one of the lowest cost mortars.

AVAILABILITY

Available east of the Rocky Mountains.

LIMITATIONS OF USE

None.

RED TOP* MASONS HYDRATED LIME

DESCRIPTION

A normal hydrated lime, either dolomitic or high calcium, for use in masonry mortar. Complies with A.S.T.M. C207, Type N; Federal Specification SS-L-351, Type M; National Lime Association, Type N.

FUNCTION AND UTILITY

Plasticity—Properly soaked Masons Hydrated Lime has a sufficiently high plasticity to impart excellent working qualities to masonry mortar."

Water Retentivity—"Flow after suction" with a 1:1¼:6 and 1:2½:9 mix exceeds 70 per cent, the minimum requirement of ASTM specifications, which insures that the mortar will have excellent bonding characteristics and will adequately resist high or uneven suction in the masonry units.

Low Volume Change.

Adequate Strength.

AVAILABILITY

Nationwide.

LIMITATIONS

1. Must be soaked at least 16 hours to develop a satisfactory plasticity and the required degree of hydration.

RED TOP* MASONRY QUICKLIME

DESCRIPTION

RED TOP Masonry Quicklime is manufactured in pulverized form. Complies with A.S.T.M. C5 and Federal Specification SS-Q-351.

FUNCTION AND UTILITY

Properly slaked and aged, RED TOP Masonry Quicklime develops into a putty which imparts the desired characteristics to masonry mortar to a high degree.

Plasticity—Generally this product in a mortar exhibits the highest plasticity and easiest working qualities of the three types of lime.

Water Retentivity—A 1:2½:9 mix shows "flow after suction" of 89 per cent.

Low Volume Change.

Adequate Strength.

High Yield—Produces over 50 per cent more putty volume than hydrated limes.

LIMITATIONS

1. For best results, quicklime must be of recent manufacture to avoid air slaking in container.

2. Must be handled carefully to avoid burning.

3. Must be properly slaked and aged at least 16 hours, or until the putty cools to 80° F.

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*T.M. Reg. U.S. Pat. Off.

LIME FOR MASONRY MORTAR

TECHNICAL DATA

REQUIREMENTS OF ASTM C270						AVERAGE TEST RESULTS USING USG LIMES						
Mortar Types	Property Specifications		Proportion Specification			Job Mixes on Volume Basis	MORTASEAL		Red Top Masons Hydrate		Red Top Masons Quicklimes	
	Minimum Aver. Comp. Strength psi 28 Days	Flow After Suction Percent Minimum	Portland Cement (1)	Lime (2)	Sand (3)		Compressive Strength psi (4)	% Flow After (4) Suction	Compressive Strength psi (4)	% Flow After (4) Suction	Compressive Strength psi (4)	% Flow After (4) Suction
M	2500	70	1	¼	2.8 to 3¾	1:¼:3¾	4924	69.0	4277	62.8	Not Tested	66.7
S	1800	70	1	¼ to ½	2.8 to 4½	1:½:4½	3154	70.4	←	Not	Tested	→
N	750	70	1	½ to 1¼	3.4 to 6¾	1:1¼:6	2150	80.6	1953	77.2	1420	87.5
						1:1¼:6¾	1750	78.0	←	Not	Tested	→
O	350	70	1	1¼ to 2½	5.1 to 10½	1:2½:9	916	93.3	853	85.6	550	89.0
						1:2½:10½	663	78.0	←	Not	Tested	→
K	75	70	1	2½ to 4	7.9 to 15	1:4:15	203	88.3	110	80.6	Not Tested	82.0

NOTES:
(1) PORTLAND CEMENT—To comply with ASTM C150, Type I, II or III; or ASTM C175, Type IA, IIA, or IIIA.
(2) LIME—To comply with ASTM C5 (Quicklime) or ASTM C207 (Hydrated) Type N or S.
(3) SAND AGGREGATE—To comply with ASTM C144.
(4) Based on mortars as delivered to mason having initial flows between 100 and 115%.

CONCLUSIONS: A 1:½:4½ mortar with MORTASEAL complies with ASTM C270, Type M, Property Specifications.
A 1:1¼:6 mortar with MORTASEAL or RED TOP Masons Hydrate complies with ASTM C270, Type S, Property Specifications.
A 1:2½:9 mortar with MORTASEAL or RED TOP Masons Hydrate complies with ASTM C270, Type N, Property Specifications.

SPECIFICATIONS

(The following are offered as desirable inclusions in any masonry specification, and are not intended as a complete section covering Masonry Specifications.)

GENERAL PROVISIONS

All masonry materials shall be protected from freezing so that they will remain above 35° F. until they have been placed and suitably protected.

Masonry shall be protected against freezing for at least 48 hours after placing. Unless such precautions against freezing are taken, no masonry shall be erected when temperature is below 32° F. on a rising temperature, or below 40° F. on a falling temperature. No masonry shall be laid on walls or footings that are frozen or contain frost.

MORTAR MATERIALS

Lime—shall be: *(select one)*
(MORTASEAL)
(RED TOP Masons Hydrated Lime)
(RED TOP Masons Quicklime)
manufactured by United States Gypsum Company.

Portland Cement—shall comply with ASTM C150, Type I, II, or III, or ASTM C175, Type IA, IIA, or IIIA.

Sand—shall comply with ASTM C144.

Water—used in mixing mortar shall be clean and free from deleterious amounts of acids, alkalies or organic materials.

LIME PREPARATION *(select one)*

(MORTASEAL shall be mixed without soaking or slaking.)
(RED TOP Masons Hydrated Lime shall be soaked at least 16 hours before using.)
(RED TOP Masons Quicklime shall be slaked and aged for at least 16 hours, or until the putty temperature is 80° F. or less.)

MORTAR MIX

1. Above Grade—Mortar made from materials complying with the above specifications shall be mixed in proportion of one bag Portland cement, two bags lime (or two and one half cubic feet quicklime putty), to not more than ten and one half cubic feet sand (1:2½:10½).

2. Below Grade—Mortar made from materials complying with these specifications shall be mixed in proportion of one bag Portland cement, one bag lime (or one and one quarter cubic feet quicklime putty), to not more than six and three fourths cubic feet of sand (1:1¼:6¾).

3. Specialized Uses—
(a) For extra-strength, reduce proportion of sand (i.e. 1:2½:8 or 1:1¼:5, but not less than 1:2:6¾ or 1:1:4½).
(b) For extreme strength or under excessive moisture conditions, reduce lime content (viz. 1:1/4:3).
(c) For glass block, use 1:1:4, or 1:1:5 mix.
(d) For power plant chimneys, use 1:2:5 mix.
(e) For ceramic tile, use 1:1:6 mix.
(f) For gypsum tile, use one part RED TOP Partition Tile Cement and three parts sand by weight.

WORKMANSHIP

Note to Architect: Detailed workmanship specifications will vary, depending on type of job and building units involved. However, it is suggested that on all masonry work, the following be incorporated:

1. Mortar shall be laid in a uniform bed without furrows and all joints shall be completely filled. Sufficient mortar shall be placed in mortar beds and in head and collar joints to completely fill all spaces between masonry units.
2. Highly absorbent brick shall be wetted (not *soaked*) before laying.
3. Mortar materials shall be accurately proportioned and thoroughly mixed. Retempering with additional water shall be kept to a minimum. Mortar which has been mixed for more than 2 hours shall be discarded.

UNITED STATES GYPSUM

General Offices: 300 West Adams Street, Chicago 6, Ill.

A.I.A. File 20-C

TECHNICAL INFORMATION

USG® BUILDING METAL SPECIALTIES

UNITED STATES GYPSUM

1961

A.I.A. File 20-C

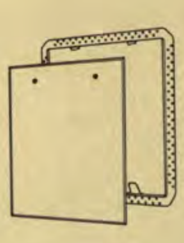
METAL SPECIALTIES

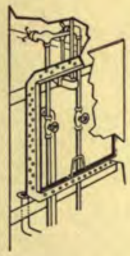
STEEL ACCESS PANELS

USG Steel Access Panels provide speedy and convenient access to key service points for plumbing, heating, electrical and air-conditioning systems. They eliminate costly cutting into walls and ceilings for inspection and maintenance of equipment. Ideal, too, for turning enclosed areas into valuable extra storage space.

Adaptable—can be used with walls and ceilings of metal lath or gypsum lath and plaster; gypsum wallboard; or, other wall and ceiling construction material.

Four practical sizes: 8″ x 8″, 12″ x 12″, 14″ x 20″ and 22″ x 24″.

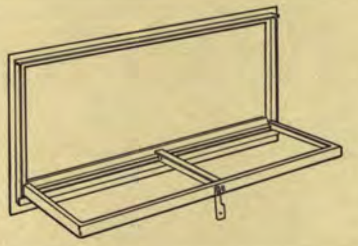


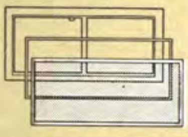


STEEL BASEMENT SASH

USG Steel Basement Sash is manufactured of sturdy, hot-rolled steel sections of uniform thickness. Fully automatic manufacturing equipment assures perfect fit of all parts for trouble free operation. Window can be easily removed or adjusted to half or full ventilating position. The latch provides a positive lock for security. The sill design provides maximum resistance to weather. The entire unit is protected from rust by a factory applied coat of gray primer. All sash provided with glazing clips and cork gaskets cemented in place for puttyless glazing, unless otherwise specified.

Sash Size (2 light)	Glass Size	Over-All Dimensions
1512M	15″ x 12″	33⅜″ x 15¼″
1516M	15″ x 16″	33⅜″ x 19¼″
1520M	15″ x 20″	33⅜″ x 23¼″



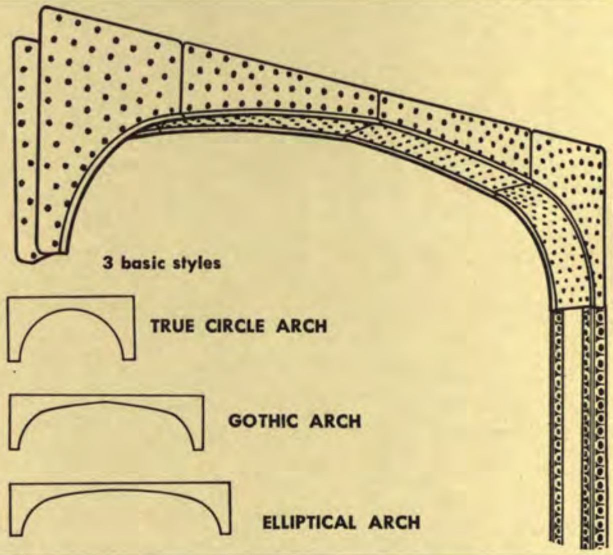


SCREENS AND STORM PANELS
Screens and Storm Panels are available for all sizes of USG Basement Sash. Screens are fabricated of bronze wire held rigidly in a cold-rolled electro-galvanized and painted steel frame.

READY-FORMED METAL ARCHES

USG Metal Arches are made of galvanized steel and perforated for proper plaster keying. They are ready to put in place as they come from the carton. Adaptable to most size openings and partition thicknesses. There are no forms to make; no corner bead to bend or shape by hand. The arch sections fit perfectly over 2 x 4 studs and any type lath, or over masonry of a similar thickness.

Style of Arch	Finished Opening	Arch Base to Header	Rough Opening
No. 11–True Circle	20″	10⅜″	21½″
No. 22–True Circle	31½″	16⅛″	33″
No. 33–Gothic	31½″	11¹³⁄₁₆″	33″
No. 36–Elliptical	37½″	11⅜″	39″
No. 44–Gothic	49½″	12⅞″	51″
No. 55–Elliptical	61½″	13¼″	63″
No. 66–Elliptical	70½″	13¼″	72″



METAL LATH PLASTER BASES

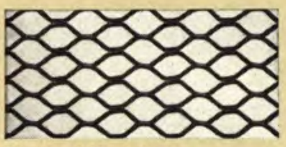
USG Junior Diamond Mesh Lath. A general all-purpose lath. Made of copper alloy steel, painted; in weights of 2.5 or 3.4 lb per sq yd. Galvanized steel available in 3.4 lb only. Also manufactured in self-furring type for use in column fireproofing, exterior stucco and for replastering old plaster surfaces. Size: 27″ x 96″.

USG 4-Mesh Riblath. A plaster-saving lath designed to meet the demand for a more rigid type plaster base. Made only of copper alloy steel painted. Size 27″ x 96″, Weight: 2.75 lbs and 3.4 lbs per sq yd.

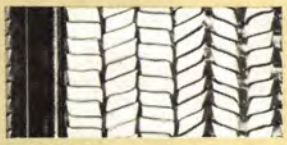
USG ⅜″ Riblath. Herringbone pattern mesh with ⅜″ V-shaped ribs to provide exceptional rigidity. Use when supports are over 16″ and not more than 24″ c to c.; for 2″ solid studless metal lath and plaster partitions; and as centering for concrete floor and roof slabs. Copper alloy steel only. Size: 27″ x 96″. Weight: 3.4 lb and 4.0 lbs. per sq yd.

USG ¾″ Riblath. A heavy structural riblath used primarily for centering and reinforcement of concrete floor and roof slabs. Sizes: 2′ x 8′, 2′ x 10′ and 2′ x 12′. Weight: .60 psf and .75 psf.

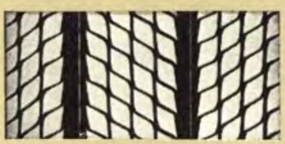
USG Expanded Metal Stuccomesh. Diamond pattern mesh (1⅜″ x 3⅛″) lath designed as a base and reinforcement for exterior stucco. Applied with stucco furring nails. Size: 48″ x 99″. Weight: 1.8 lb and 3.6 lb per sq yd.



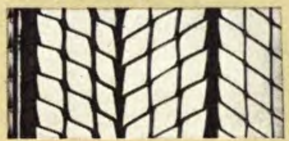
Diamond Mesh Lath



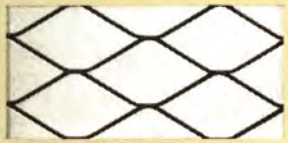
¾″ Riblath



4-Mesh Z-Riblath



⅜″ Riblath



Expanded Metal Stuccomesh

USG BUILDING METAL SPECIALTIES

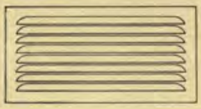
USG ALUMINUM LOUVERS

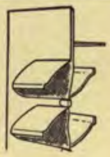
USG Aluminum Louvers are available in many designs and sizes to fill any architectural need and provide the maximum amount of free ventilating area for the size of the opening. Strongly built of durable, rust-proof aluminum they will last the lifetime of the building. An exclusive patented louver design assures protection against heavy rain or snow with maximum ventilating area.

FHA Requirements and USG Louver Specifications—Page 4

RECTANGULAR LOUVERS

Balanced air flow—larger openings compensate for solid portion of screen, giving greater free ventilating area. More openings per unit, all are functional. May be installed as flush type or self-casing without cutting or notching studs. Built-in 8 mesh rust-proof screen; 16-mesh optional. Maximum weather protection.

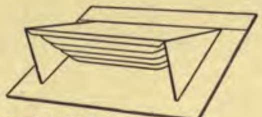




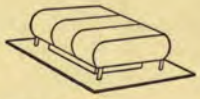
12 SIZES—

PITCHED ROOF VENTILATORS

Made of heavy embossed aluminum. Suitable for most pitched roofs. Model 64 can be installed on flat roofs. Exclusive design provides excellent weather protection and larger free ventilating area.



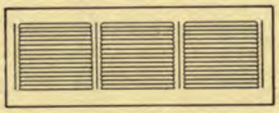
Model 375



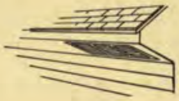
Model 64

EXTERIOR AIR VENTS

For under-eave installation. Especially suitable for hip roof construction. Small louver design gives excellent weather protection.

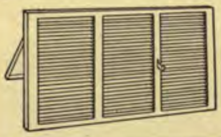


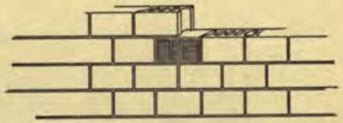
3 SIZES—



FOUNDATION VENTS (Masonry)

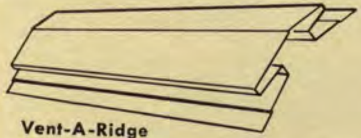
Made of stamped aluminum to match concrete block size. Available with or without door and with or without screening. May be used as interior partition or door vents.





VENT-A-RIDGE *LOUVER & ACCESSORIES.

An attractive aluminum ridge vent with 18 sq. in. of net free ventilating area per lin. foot. Provides excellent protection from weather. Connectors and end plugs made of vinyl plastic.



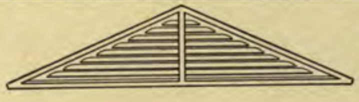
Vent-A-Ridge

Vinyl Connecting Plug

Vinyl End Plugs

FIXED PITCH TRIANGULAR LOUVERS

Made of embossed aluminum, in two sections for ease of handling and installation. Large ventilating capacity. Well suited for use with attic fans. Built-in 8-mesh rust-proof screen; 16-mesh optional.

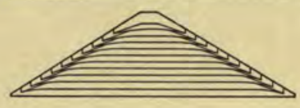


8 SIZES—

MULTI-PITCH* Adjustable Louvers

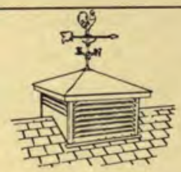
Designed to fit any pitch from 4-12 to 12-12 by a unique adjustable feature which keeps the openings equally spaced regardless of pitch. For use with Gable Roofs. Installed under facia board, no need to cut or notch studs.

4 MODELS—



Cupola CU-PO-VENT* Ventilators

Designed to provide maximum ventilation for flat, hip and low-pitched roofs. Well suited for use with attic fans. Roof section is sound-cushioned with undercoating. With or without weather vanes.



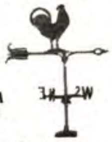
Model 3, designed for ridge mounting on low-pitched roofs up 6-12 pitch. Shipped with complete assembly instructions. (weather vane extra.)

Model 7, designed for hip roof, flat roof or curb mounting (roof curb not furnished). Shipped with complete assembly instructions.

Model 5, designed for roof pitches up to 10 in 12. Shipped completely assembled with curb, ready for installation.

CAST ALUMINUM WEATHERVANES

4 MODELS—



1. Crowing Rooster

2. Boxer Dog

3. Flying Duck

4. Country Doctor

---

* Reg. T.M. of Home Comfort Mfg. Co., Peoria, Ill.

VENTILATION

Proper attic ventilation is a necessity for all homes, particularly if an adequate vapor barrier is not used in top floor ceiling construction. Inadequate ventilation causes condensation in winter resulting in wet, ineffective insulation, damaged interior finishes, paint peeling, wood rot, curled sheathing and roofing. In summer, high attic and interior temperatures result.

TABLE OF REQUIRED FREE AREA

Width (in feet)

LENGTH (in feet)	20	22	24	26	28	30	32	34	36	38	40	42
20	192	211	230	250	269	288	307	326	346	365	384	403
22	211	232	253	275	296	317	338	359	380	401	422	444
24	230	253	276	300	323	346	369	392	415	438	461	484
26	250	275	300	324	349	374	399	424	449	474	499	524
28	269	296	323	349	376	403	430	457	484	511	538	564
30	288	317	346	374	403	432	461	490	518	547	576	605
32	307	338	369	399	430	461	492	522	553	584	614	645
34	326	359	392	424	457	490	522	555	588	620	653	685
36	346	380	415	449	484	518	553	588	622	657	691	726
38	365	401	438	474	511	547	584	620	657	693	730	766
40	384	422	461	499	538	576	614	653	691	730	768	806
42	403	444	484	524	564	605	645	685	726	766	806	847
44	422	465	507	549	591	634	676	718	760	803	845	887
46	442	486	530	574	618	662	707	751	795	839	883	927
48	461	507	553	599	645	691	737	783	829	876	922	968
50	480	528	576	624	672	720	768	816	864	912	960	1008

HOW TO USE—Using length and width dimensions of each rectangular or square attic space, find one dimension on vertical column, other dimension on horizontal column. These will intersect at number of square inches of ventilation required by F.H.A.

FHA REQUIREMENTS

ATTIC AREA—Provide cross ventilation for all spaces between roof and top floor ceiling with corrosion-resistant 8 mesh screened louvers as follows:

ROOFS WITH SLOPES 2 IN 12 OR GREATER—1/300 of the horizontal projection of the roof area over each space. One-half the required ventilation shall be in the upper part of the ventilated space as near the high point of the roof as practicable.

ROOFS WITH SLOPES LESS THAN 2 IN 12—1/150 of the horizontal projection area over each space unless a complete continuous vapor-barrier is provided, in which case, use 1/300.

FOUNDATION VENTILATION—provide cross ventilation by corrosion-resistant screened vents, 8 mesh per inch, as follows: 2 sq. ft. per 100 lineal ft. of foundation plus 1/300 of the ground area. Minimum, 4 vents located at corners.

REQUIRED LOUVER AREA FOR ATTIC FANS—the data listed in the following USG louver specifications shows the cubic feet per minute capacity of each USG louver. Use one or a combination of louvers having a C.F.M. capacity equivalent to the C.F.M. capacity of the fan to be installed.

USG LOUVER SPECIFICATIONS

The ventilating areas shown are not gross, but net, as required by F.H.A. All restrictions have been allowed for.

Fan capacities shown have been calculated in accordance with F.H.A. requirements and the recommendations of the Propeller Fan Manufacturers Association bulletin No. 52. "Residential Ventilating Guide," second edition.

Name or Size	Opening Size	Net Ventilating Area*	Fan Capacity in C.F.M.
RECTANGULAR WALL LOUVERS			
8″ x 8″	8½″ x 8½″	29.6 sq. in.	225
8″ x 12″	8½″ x 12½″	44.4 sq. in.	340
8″ x 16″	8½″ x 16½″	60 sq. in.	460
12″ x 12″	12½″ x 12½″	75 sq. in.	570
12″ x 18″	12½″ x 18½″	112 sq. in.	860
12″ x 24″	12½″ x 24½″	150 sq. in.	1140
14″ x 24″	14½″ x 24½″	172 sq. in.	1300
24″ x 30″	24¾″ x 30¾″	380 sq. in.	2900
30″ x 12″	30¾″ x 12¾″	170 sq. in.	1310
30″ x 18″	30¾″ x 18¾″	255 sq. in.	1930
30″ x 24″	30¾″ x 24¾″	340 sq. in.	2620
30″ x 34″	30¾″ x 34¾″	481 sq. in.	3670
PITCH ROOF LOUVERS			
Model 64	8″ x 8″	64 sq. in.	390
Model 375	12¾″ x 6¼″	37.5 sq. in.	280
EXTERIOR AIR VENT			
16″ x 4″	14½″ x 3⅛″	26 sq. in.	195
16″ x 5⅝″	14½″ x 4½″	38 sq. in.	285
16″ x 8″	14½″ x 6¾″	57 sq. in.	427
FOUNDATION VENTS (Masonry)			
FM (plain)	15⅝″ x 7⅝″	45 sq. in.	—
FM (w/d)	15⅝″ x 7⅝″	45 sq. in.	—
VENT-A-RIDGE			
Vent-A-Ridge 8′	—	18 sq. in.	222 per
9′	—	Per Lin. Ft.	Lin. Ft.
10′	—		

Pitch	Base Length	Altitude		
FIXED-PITCH TRIANGULAR LOUVERS				
3/12	120″	15″	344 sq. in.	2611
4/12	96″	16″	292 sq. in.	2190
4/12	120″	20″	502 sq. in.	3370
4/12	144″	24″	760 sq. in.	5700
5/12	96″	20″	408 sq. in.	3140
5/12	120″	25″	658 sq. in.	4935
5/12	144″	30″	987 sq. in.	7403
6/12	96″	24″	495 sq. in.	3600

MULTI-PITCH ADJUSTABLE TRIANGULAR LOUVERS

Model 47

4/12	64″	10¾″	204 sq. in.	1310
7/12	41½″	12″	134 sq. in.	950

Model 47 Jr.

4/12	52½″	8¾″	140 sq. in.	875
7/12	34½″	10″	90 sq. in.	650

Model 712

7/12	41⅛″	12″	144 sq. in.	940
12/12	27¾″	13⅞″	100 sq. in.	735

Model 712 Jr.

7/12	30⅜″	8⅞″	82 sq. in.	515
12/12	21½″	10¾″	59 sq. in.	440

CUPALA "Cu-po-vent" VENTILATORS

Model	Base Size	Altitude		
3	33″ x 33″	29″	567 sq. in.	4150
7	33″ x 33″	29″	794 sq. in.	5950
5	17″ x 17″	25″	215 sq. in.	1630

Cu-Po-Vent opening sizes given in instructions for installation.

*Certified by Metal Ventilator Institute

A.I.A. File 21-A
39-B

TECHNICAL INFORMATION

USG* GYPSUM PLASTERS —

BASECOAT PLASTERS
FINISHING LIMES
ACOUSTICAL PLASTERS
FIREPROOFING PLASTERS

UNITED STATES GYPSUM

1964

*T.M. Reg. U.S. Pat. Off.

UNITED
STATES
GYPSUM

A.I.A. File 21-A
39-B

BASECOAT PLASTERS

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NOTE TO THE ARCHITECT

In the preparation of plastering specification consideration should be given to the selection of materials for compatibility and the quality of the structure to be plastered. ASA Specifications and the specifications within the AIA File are based on Minimum Standards. Unfortunately, most plastering specifications are written on a minimum basis, despite the fact that all the elements are available to upgrade plastering for quality installations. It is not possible to be specific without knowing the project under design, the type base, etc., however, it is possible to generalize. The following recommendations are listed in the order of preference:

Basecoat Plaster (over metal lath)

Scratch Coat	Brown Coat
1. Structo-Base ① Cement Plaster, Sanded 1:2	Structo-Base Cement Plaster, sanded 1:3
2. Wood Fiber, neat, or sanded up to 1:1	Wood Fiber, sanded up to 1:1
3. Wood Fiber, neat, or sanded up to 1:1	Red Top* Cement Plaster, sanded 1:1
4. Wood Fiber, neat	Structo-Lite*
5. Red Top Cement Plaster sanded 1:2	Red Top Cement Plaster, sanded 1:3
6. Structo-Lite	Structo-Lite
7. Red Top Cement Plaster, perlited 1:2	Red Top Cement Plaster perlited 1:2

① Verify availability with your local U.S.G. Sales representative.

Aggregates

1. Sand
2. Mill Mixed Perlite
3. Job Mixed Perlite
4. Job Mixed Vermiculite

NOTE: Lightweight aggregates must *never* be used on a construction where sound isolation is a consideration.

Finish Coats

Float Finishes

1. Oriental Interior
2. Ivory Lime (92% hydrate) Keenes Cement and White Silica Sand

Smooth Trowel Finishes

1. Ivory Lime, and Structo-Gauge
2. Ivory Lime, and Keenes Cement
3. Ivory Lime, Red Top Gauging, with ½ cu. ft. of Perlite fines or fine silica sand.

NOTE: Float Finishes 1, 2 and Trowel Finish 3 are the only finishes recommended for use over a perlited basecoat. Finishes 1 and 2 (smooth trowel) provide high abrasion resistance and because of their hardness must be used over a comparably hard basecoat.

Application

Three-coat work is mandatory on all metal lath and edge supported gypsum lath on ceiling construction.

Three-coat work is desirable on all gypsum lath.

Two-coat work is acceptable on unperforated gypsum lath and masonry plaster bases.

The UNITED STATES GYPSUM COMPANY maintains a qualified staff of Technical Consultants, Architect Service Representatives, conveniently located in most major markets to assist in resolving specific problems.

BASECOAT PLASTERS

DESCRIPTION

The base of all gypsum plasters is gypsum rock, hydrous calcium sulfate, which has a water content of about 20% in chemical combination. In its manufacture, chemically combined water is removed from the gypsum rock by means of a controlled calcination procedure. Then as water is added at the job, the material crystallizes (sets), reverting to its original chemical composition.

Red Top Gypsum Plasters are specifically formulated to control setting time and other important characteristics. This depends upon the intended method of application, the climatic conditions of the area in which they will be used, and their intended use.

USG Basecoat Plasters can be applied by using either hand or machine methods, on gypsum or metal lath; gypsum, clay, or concrete tile; concrete or cinder blocks; brick, or other approved plaster bases.

FUNCTION & UTILITY

Basecoat plasters provide a plastic working material which will conform to most designs and provide the ultimate in durable walls and ceilings.

Fire-Protection—Gypsum plaster, properly proportioned with approved aggregates, and used in conjunction with specific plaster bases, provides excellent fire-protection.
(See pages 12 & 13 of AIA File 20 for "Fire Test Data")

Strength—There are significant differences in the strengths of gypsum basecoat plasters. The strength of a gypsum basecoat plaster is dependent on four factors:

1. *Water-Cement Ratio*—The water required to produce a plastic mix depends on the amount and type of aggregate. (See technical data page 3)
2. *Control of Set*—Red Top Gypsum Plasters are formulated for use with market aggregates, climatic conditions, and job conditions. The quicker a gypsum plaster sets, the stronger the basecoat.
3. *Time of Application*—Plasters should be applied within one hour after mixing to assure desired strength and proper bond.
4. *Ventilation and Drying* are important adjuncts to producing a strong basecoat once the gypsum plaster has set. Not only must the plaster be dried, but the water must be removed from the building.

Sound Isolation—Gypsum plaster in combination with lathing or construction systems offers sound transmission loss characteristics suitable for most requirements. Sanded basecoat plasters provide the optimum results.

• Since methods and conditions of application and use are beyond our control, the United States Gypsum Company will not be responsible for failure of its products when not used according to directions and specifications.

*T.M. Reg. U.S. Pat. Off.

LIMITATIONS OF USE

1. Structo-Base, or Red Top Cement Plaster must have aggregate added strictly according to specifications. Use of too much aggregate drastically decreases its strength.
2. Machine application of wood fiber plaster requires the addition of up to 1 cu. ft. of sand per 100 lbs. of plaster.
3. Where sound transmission is the prime consideration in partition or ceiling assemblies, use sand aggregate only, since mass is a controlling factor.
4. Bondcrete should be used on interior concrete surfaces providing the surface is sufficiently rough to provide a proper bond. Maximum thickness of Bondcrete shall not exceed ⅜″ on ceilings or ⅝″ on walls. If additional thickness is required, self-furring metal lath should be secured to the concrete surfaces. Under no circumstances should Structo-Base or Red Top Cement Plaster or Wood Fiber Plaster be applied directly to monolithic concrete.
5. Gypsum plasters should not be used where they will come in contact with water or excessive moisture. In such instances use Portland cement-lime plaster.

   Gypsum plasters may be applied to ceilings of open porches, car-ports, soffits of eaves, walkways, and canopies, but only when these surfaces are horizontal or inclined downward from the structure. All such plaster surfaces should be protected from direct exposure to rain and suitable drips and casings provided along edge exposure. Refer to Gypsum Association, AIA File 21-A-2, Gypsum Plaster in Exterior Locations.
6. Plaster application on masonry or concrete walls, or ceilings that have been coated with bituminous compounds or other waterproofing agents is not recommended.

   Because of the possibility of condensation or water seepage, plastering to interior side of exterior masonry walls above grade or exterior foundation walls below grade is not recommended. In each instance they shall be furred and lathed before plastering. Sub-grade construction should also be water-proofed on the exterior side.
7. Radiant heat plaster slabs shall not have surface temperatures exceeding 115° Fahrenheit. Check conductivity of the plaster and aggregate. The thermal conductivity of gypsum-sand plaster is approximately three times that of Structo-Lite. Refer to Gypsum Association, AIA File 21-A-2, Gypsum Plaster with Radiant Heating.
8. Basecoat plasters must not abut or stop against a hollow metal door frame return unless provision is made to dampen the trim return vibration by grouting, and the use of special anchors. Lath and plaster should recess into or behind metal frames or base.
9. On remodeling work where a new plaster surface is to be applied over an existing wall or ceiling, the use of self-furring metal lath, with scratch and brown coats of neat wood fiber plaster, will give superior results. The use of gypsum plasters containing light weight aggregates is not recommended for this purpose.

USE OF AGGREGATES With Gypsum Cement Plasters—maximum recommended proportions

Plastering Base	Number of Coats	Type of Coats	Maximum quantity of aggregate, in cu. ft. to be used with 100 lbs. of neat gypsum plaster			
			UNDER SMOOTH TROWEL FINISHES		UNDER OTHER FINISHES	
			Sand (1)	Perlite or Vermiculite	Sand (1)	Perlite or Vermiculite
GYPSUM LATH	3	Scratch Brown	2 3	2 2	2 3	2 3
	2	Basecoat	2½	2	2½	2½
METAL LATH	3	Scratch Brown	2 3	2 (See 2 Note)	2 3	2 3
UNIT MASONRY	3	Scratch Brown	3 3	3 3	3 3	3 3
	2	Basecoat	3	3	3	3

NOTE: Under a smooth trowel finish, in a construction system which has metal lath as the plaster base, vermiculite aggregate is not recommended for use in the basecoat plaster.

(1) Approximately six No. 2 shovels of sand equal 1 cu. ft.

TECHNICAL DATA—Basecoat Plasters

PLASTER		MIX	COMPRESSIVE STRENGTH	WEIGHT	CONDUCTIVITY
			psi—dry (1)	lb./cu. ft.—dry	(K)
STRUCTO-LITE	(Regular)		900	50	1.74
WOOD FIBER		Neat	2000	82	3.15
WOOD FIBER	(Sand)	100:1	1700 (2)	97	
STRUCTO-BASE	(Sand)	100:2	3750	124	
		100:3	2500	121	
RED TOP CEMENT PLASTER MIXED WITH—	Sand	100:1	1800	100	
		100:2	1065	107	5.51
		100:3	650	109	5.60
	Perlite	100:2	900	48	1.64
		100:3	550	41	1.31
	Vermiculite	100.2	485	48	1.74
		100.3	290	41	1.42

(1) Average Laboratory Test Results. Figures may vary slightly for products from individual mills. Tested in accordance with ASTM C26.

*T. M. Reg. U. S. Pat. Off.

BASECOAT PLASTERS

RED TOP Wood Fiber Plaster

Complies with ASTM Spec. C-28 and Federal Specification No. SS-P-402 Type W.

Red Top Wood Fiber Plaster is a gypsum plaster containing fine particles of selected wood fiber. It normally requires the addition of water only; however, when used over masonry plaster bases, 1 cu. ft. of sand per 100 lbs. of plaster must be added and when used as a brown coat 1 cu. ft. of sand may be added. Wood fiber plaster can be applied to all standard lath and masonry plaster bases.

Wood fiber plaster is strongly recommended as a scratch coat for metal lath.

Weight—Wood fiber weighs approximately one-quarter less than a sanded gypsum basecoat.

Strength—Wood fiber has twice the compressive and tensile strength of sanded plaster.

Fire-Resistance—Wood fiber is an excellent fireproofing material, generally provides 50% higher ratings than sanded gypsum plaster.

Cost—Wood fiber plaster costs slightly more than sanded gypsum plaster. (Neat) Cost Index—122

RED TOP Cement Plaster

Complies with ASTM C-28 and Federal Specification No. SS-P-402 Type N.

Red Top Cement Plaster is a gypsum basecoat requiring the addition of aggregate. It is supplied as either Fibered or Unfibered and is formulated for use over all accepted plaster bases. Formulation includes:

Regular—for use with sand aggregate, hand application.

LW—for use with lightweight aggregate, hand application.

Machine Application—for use with sand or lightweight aggregate.

Quality—Gypsum cement plaster is set stabilized and formulated for market conditions and seasonal changes.

Strength—Red Top Cement Plaster properly proportioned with aggregate forms a hard durable base for application of finish coats. Compressive strengths based on the type aggregate and proportioning are shown in the Technical Data Table, page 3.

Fire-Resistance—The fire-rating of specific assemblies, based on the type aggregate and proportioning, is shown in the Fire Ratings, AIA File 20, pages 12 & 13.

Cost—The Gypsum cement plaster mixed with a low cost aggregate increases its bulk and coverage. Highly plastic, it is easily and quickly applied. Cost Index—100

STRUCTO-BASE Cement Plaster

Complies with Federal Specifications SS-P-402, Type N, and ASTM Designation C-28 for "gypsum neat plaster" including the added requirement of 3,500 lbs. per square inch compressive strength when mixed with two parts by weight of Standard Ottawa Sand.

Structo-Base is a special gypsum basecoat plaster that develops higher strengths than conventional plasters. It is recommended for basecoat plaster in such areas as handball courts, hospital corridors, schools, etc., or wherever a high strength basecoat plaster is necessary. (Consult your local U.S.G. Sales representative for availability in your area.)

Cost Index—110

RED TOP STRUCTO-LITE Plaster

Complies with ASTM C-28 for gypsum ready mixed plaster.

Red Top Structo-Lite is a mill mixed gypsum cement plaster and perlite aggregate which requires the addition of water only at the job site. It is formulated in four types:

Regular—for use over gypsum lath, hand application.

Masonry—for use on high suction unit masonry base only, hand application.

Regular—for use over gypsum lath, machine application.

Masonry for Machine Application on high suction masonry unit.

Quality—Red Top Structo-Lite is formulated to assure the architect of a unit responsibility. Mill mixed lightweight aggregated plaster provides:

1. Control of set (see Red Top Cement Plaster, LW formulation).
2. Proper proportioning of aggregate (see page 3, two cubic feet of lightweight aggregate is recommended for both scratch and brown).
3. A quality of perlite with proper gradation and hardness necessary for a basecoat plaster.

Weight—Structo-Lite weighs less than half as much as sanded basecoat plaster.

Insulation—Structo-Lite has a "k" factor of 1.55, providing 3½ times the insulation of sanded plaster. For this reason Structo-Lite is not recommended for use with radiant heated panels.

Fire-Resistance—The added fire-protection afforded by Structo-Lite is the outstanding contribution of the product.

Cost—Over-all cost is comparable to job-mixed lightweight aggregate plaster. Cost Index—106

RED TOP BONDCRETE Plaster

Complies with ASTM C-28 for gypsum bond plaster.

Red Top Bondcrete is a specially formulated bonding basecoat plaster for use over properly roughened interior concrete surfaces. Water only is added.

Bond—Bondcrete adheres to properly prepared concrete surfaces (see Specifications, Section V, paragraph "a"). Bondcrete has approximately the same coefficient of expansion as concrete.

Cost—Since both labor and material costs are virtually the same as wood fiber plaster, it is an economical and practical basecoat for concrete surfaces.

*T. M. Reg. U. S. Pat. Off.

BASECOAT PLASTERS—Cont'd

FINISH COAT PLASTERS

PORTLAND CEMENT PLASTER

Portland Cement Basecoat Plasters are required for interior use where high moisture conditions exist or as an exterior basecoat for stucco. A Portland Cement Lime Plaster is prepared on the job in the following proportions:

Scratch Coat—1 sack of Portland Cement
2 sacks of MORTASEAL* Lime
7½ cu. ft. of sand
2 lbs. of fiber (over metal lath or stucco mesh)

Brown Coat—1 sack of Portland Cement
2 sacks of MORTASEAL* Lime
9 cu. ft. of sand

Finish Coat—USG's ORIENTAL Exterior Stucco (Mill mixed), a white, or colored float or texture finish plaster.

LIMITATIONS OF USE

1. Scratch and brown coat requires curing with water after set.
2. Must not be applied directly to smooth, dense surfaces, gypsum lath or gypsum block. Self-furring metal lath must be secured to such surfaces before plaster is applied.
3. Control joints should be provided to compensate for the shrinkage of the Portland cement mortar during drying.
4. A Keenes cement-lime putty finish must never be used over a Portland cement basecoat.

FINISH COAT PLASTERS

DESCRIPTION

There are several types of gypsum finish plasters, some are used with the addition of water only, while others are a blend of gypsum, lime and water, or gypsum, lime, sand and water.

Since the finish coat must be compatible with the basecoat care must be taken in the selection of the finish coat materials in relationship with the characteristics of the basecoat.

There are three general classifications of finishing materials:

1. Prepared finishes
2. Smooth trowel finishes
3. Sand float finishes

FUNCTION & UTILITY

The finish coat serves as a leveling coat, as a base for decoration and provides the required resistance to abrasion.

Gauging plasters impart an early hardness and strength, minimizing the shrinkage characteristic of lime.

LIMITATIONS OF USE

1. Where *vermiculite* is used as the aggregate in a gypsum basecoat, or the proportion of perlite exceeds 1:2, a Sand Float Finish or an Acoustical Plaster must be used.
2. Where perlite is used as the aggregate in a gypsum basecoat (recommended proportioning 1:2), or when the basecoat is STRUCTO-LITE, the finish coat must be an Acoustical Plaster, a sand float finish, or a trowel finish of RED TOP Gauging Plaster and lime, with addition of ½ cu. ft. of perlite fines or 50 lbs. of No. 1 white silica sand per 100 lbs. gauging plaster.
3. Gypsum base finishes including Keenes cement should not be used over a Portland Cement Basecoat.
4. Gauging plasters providing extremely hard surface abrasion, STRUCTO-GAUGE and Keenes cement, must not be used over STRUCTO-LITE, or a basecoat with a lightweight aggregate.

FINISH COAT MATERIALS

A chart for the selection of finish coat materials is provided on page 6. The following materials are included:

ORIENTAL* Interior Stucco—A white finish plaster for a sand float or textured finish. May also be ordered formulated for machine application. Provides excellent hardness and a very durable finish.

Gauging Plasters—For blending with lime putty.

STRUCTO-GAUGE—A high strength gypsum gauging plaster, which provides the greatest hardness and resistance to surface abrasion. Complies with ASTM C-28 and Federal Specification SS-P-402, with the added requirement of 5000 psi.

RED TOP Keenes Cement—A dead burned gypsum gauging, which requires extensive troweling. This troweling densifies the surface for hardness and resistance to surface abrasion. Complies with ASTM C-61 and Federal Specification SS-C-161 Type I (Regular) II (Quick Troweling).

CHAMPION* and STAR* WHITE Gauging Plaster—These conventional quick and slow set gauging plasters, comply with ASTM C-28 and Federal Specification SS-P-402, Type G.

RED TOP Gauging—Similar to CHAMPION and STAR Gauging except it comes in a slightly darker color. Complies with ASTM C-28 and Federal Specification SS-P-402, Type G.

FINISHING LIMES

IVORY* Double Hydrated Finishing Lime—A 92% hydrated finishing lime. Does not require soaking, and eliminates the possibility of future expansion within the finish coat because of unhydrated magnesium oxides. Complies with ASTM C-206, Type S, and Federal Specification SS-L-351, Type F. (Not more than 8% unhydrated oxides).

RED TOP* and GRAND PRIZE* Normal Hydrate Finishing Lime—Hydrate lime which requires soaking at least sixteen hours to develop proper plasticity and the degree of hydration necessary prior to use. Complies with ASTM C6, Type N, and Federal Specification SS-L-351, Type F.

RED TOP Finish Quicklime—High calcium finishing lime which requires 16 hours of soaking to develop a proper plasticity and the required degree of hydration prior to use. Complies with ASTM C5 and Federal Specification SS-Q-351.

THIN COAT PLASTER

TUFCON(1) is an especially prepared spray finish of high strength gypsum for a 1/16 inch finish coat to be applied over a TUFCON(1) Base. No basecoat is required. the TUFCON Plaster finish provides an extremely hard surface with outstanding abrasion resistance.

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*T.M. Reg. U.S. Pat. Off.
(1)T.M. of Plastering Development Center, Inc.

FINISH COAT PLASTERS

APPLICATION DATA

DESCRIPTION	FINISH TEXTURE	PHYSICAL PROPERTIES	PROPORTION BY DRY WEIGHT—GAUGING TO LIME	WORKABILITY FACTOR	COMMENTS	COST INDEX
ORIENTAL* Interior Stucco	White Float or Texture Finish	Hard and Resistant to Abrasion	Neat	1	Available in white. Mill control of aggregate, size and proportioning.	160
STRUCTO-GAUGE* and Lime Putty	White Trowel Smooth	Extremely Hard and Resistant to Abrasion	1:1	2	Use for handball courts and psychopathic wards over a wood fiber or STRUCTO-BASE basecoat.	150
STRUCTO-GAUGE and Lime Putty	White Trowel Smooth	Hard and Resistant to Abrasion	1:2	1	Use for hospitals and schools over a wood fiber or sanded gypsum basecoat.	125
Keenes Cement and Lime Putty	White Trowel Smooth	Hard and Resistant to Abrasion	4:1	7	Use for handball courts and psychopathic wards over a wood fiber basecoat.	180
Keenes Cement and Lime Putty	White Trowel Smooth	Medium Hard & Resistant to Abrasion	2:1	4	Use for hospitals and schools over a wood fiber or sanded gypsum basecoat.	170
Gypsum Gauged Lime Putty	White Trowel Smooth	Standard	1:2	1	For normal use, over a perlite basecoat add ½ cu. ft. of perlite fines or 50 lbs. of #1 silica sand per 100# gauging.	100
Keenes Cement Lime Putty and Sand	White Float Finish	Hard	50 lbs. Keenes 100 lbs. Lime 400 lbs. Sand	1	Commonly used float finish, may be satisfactorily colored.	125
Gypsum Gauging Lime Putty and Sand		Standard	50 lbs. Gauging 100 lbs. Lime 400 lbs. Sand	1	For normal use over any basecoat.	100
ORIENTAL* Exterior Stucco	Colored Float or Texture Finish	Extremely Hard and Resistant to Abrasion	Neat	3	For use over a Portland cement lime basecoat. Available in white and 6 colors.	150
TUFCON(1) Finish	Spray Texture or Trowel Smooth	Extremely Hard and Resistant to Abrasion	Neat	1	For use over an especially prepared TUFCON Base. No basecoat required.	

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*T.M. Reg. U.S. Pat. Off.

(1)T.M. of Plastering Development Center, Inc.

USG ACOUSTICAL PLASTERS

The UNITED STATES GYPSUM COMPANY manufactures two types of sound absorbing, decorative finish acoustical plasters. They are architecturally adaptable to intricate ceiling designs, and can be used equally effective on curved or flat surfaces.

While these plasters perform the common function of absorbing sound and providing a decorative finish, each has certain characteristics which influence their individual selection.

HI-LITE* Acoustical Plaster

HI-LITE Stipple-Perforated

DESCRIPTION

Hi-Lite Acoustical Plaster is a pure white acoustical material, with excellent light reflective characteristics, making it particularly adaptable for use in schools and office buildings where light reflectance and efficiency of illumination are important considerations. Its relatively high moisture resistance makes it an excellent choice for acoustical treatment in natatoriums and other areas in which high humidities are anticipated. Hi-Lite Acoustical Plaster is not subject to the migration of rust stains from the construction over which it is applied.

It develops a harder finished surface than many acoustical materials, and can be cleaned or painted without reducing the absorption characteristics.

It may be applied over properly prepared gypsum plaster or Portland cement-lime plaster basecoats. It may be machine applied; however, the published sound absorption data does not apply in this case.

FUNCTION AND UTILITY

Sound Absorption—Noise Reduction Coefficient of .60 when stippled or stipple-perforated. When stippled, Hi-Lite exhibits outstanding sound absorption characteristics at the lower frequencies.

High Light Reflectance—Light reflectance of 80% for the normal stippled finish.

Maintenance—Hi-Lite Acoustical Plaster may be cleaned with low pressure vacuum cleaner using a soft brush attachment.

Paintable—May be redecorated with up to four coats of spray applied Texolite Standard Paint without reducing sound absorption characteristics.

LIMITATIONS OF USE

1. Hi-Lite must be machine mixed in strict accordance with directions to develop proper density and working qualities.
2. Hi-Lite may be machine applied, but published sound absorption coefficients do not apply unless hand applied and finished in accordance with specifications.
3. More durable than most acoustical materials, but is designed for use on ceilings or wall areas not subject to contact.
4. When perforated, a special perforator with rust resistant prongs should be used.
5. Hi-Lite is not recommended for use over radiant heating installations.
6. Hi-Lite is not recommended for direct application to monolithic concrete surfaces.

AUDICOTE* Acoustical Plaster

AUDICOTE Machine-Textured Finish

DESCRIPTION

Audicote Acoustical Plaster is a low cost acoustical material designed for either modern efficient machine application or conventional hand application methods over a wide range of surfaces. It can be applied over properly prepared gypsum or Portland cement basecoats, monolithic concrete, prefabricated concrete units.

The uniform texture resulting from spray application makes Audicote particularly suitable for use on large continuous ceiling areas. Through modifications of machine procedures and spray techniques, many pleasing textures are possible. Audicote is readily adaptable to tinting, and incorporation of special aggregates to further increase the design and decorative possibilities. Few other acoustical products present the designer with the flexibility and adaptability of Audicote Acoustical Plaster.

FUNCTION AND UTILITY

Sound Absorption—Noise Reduction Coefficient of .55.

Light Reflectance—When machine textured, has light reflectance of 65% for Satin White, and 70% for Special White.

Maintenance—May be economically refinished with a spray coat of Audicote.

Paintable—May be redecorated with up to two coats of spray applied Texolite* Standard Paint with no loss in Noise Reduction Coefficient. Up to four coats result in only a minor reduction in sound absorption characteristics.

Colors—Available in Satin White and Special White.

Audicote may also be tinted on the job.

LIMITATIONS OF USE

1. Audicote is designed for use on ceiling and wall areas not subject to contact, excessive vibration or high moisture.
2. Specified precautions must be taken under certain circumstances to prevent the migration of water-borne stains to the surface of Audicote. (See Specifications on Page 10.)
3. Audicote is not recommended for use over radiant heating installations.

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*T. M. Reg. U. S. Pat. Off.

ACOUSTICAL PLASTERS

TECHNICAL DATA

ACOUSTICAL PLASTER	FINISH	LIGHT REFLECTANCE PER CENT (1)	HEAT INSULATION "K" FACTOR (2)
HI-LITE	Stippled	.80	.50
	Stipple-Perforated	.77	
AUDICOTE	Machine Textured	Satin White .65 Special White .70	.50

LABORATORY TEST DATA

The absorptions reported below are the test results of representative panels. It is not always possible to achieve these results in the field. Care must be taken to mix the material to specified consistencies and applied to uniformly full grounds.

1. **Light reflectance from tests at an independent recognized laboratory.**
2. **Heat insulation data from tests at USG Research Laboratory.**
3. **Sound absorption from standard tests at a recognized laboratory.**

SOUND ABSORPTION (3)

ACOUSTICAL PLASTER	FINISH	FREQUENCY						NRC
		125	250	500	1000	2000	4000	
HI-LITE	Stippled	.41	.26	.59	.78	.84	.65	.60
	Stipple-Perforated	.20	.24	.50	.76	.83	.76	.60
AUDICOTE	Machine Texture	.26	.28	.53	.67	.73	.66	.55

RED TOP* FIRECODE PLASTER

DESCRIPTION

Red Top Firecode Plaster is a ready-to-use gypsum plaster for spraying directly to steel floor units, beams and columns, to provide fire protection. It is lightweight, requires no lathing, bonding, agents, or hand tool operations, and does not shrink on drying. It can also be applied over metal lath to provide a fire resistive enclosure around structural members in which piping, ductwork or electrical conduits may be enclosed.

FUNCTION AND UTILITY

Use of this lightweight fireproofing plaster in multi-story buildings to replace the heavy masonry or concrete formerly used to protect the steel structure greatly reduces the dead load and enables the designing engineer to use substantially lighter, less costly steel members. This new concept in building design is not only lower in cost, but provides increased flexibility in design, beauty, utility and safety.

Fire Ratings: Red Top Firecode Plaster provides fire-resistive ratings on all major types of steel floor units, and on steel beams and columns. (See FIRE TEST DATA for details.) Underwriters' Laboratories, Inc. have assigned a favorable Fire Hazard Classification, Guide No. 40 U 7.4½, which meets the requirements of NFPA pamphlet No. 220. UL labels on each bag verify that Red Top Firecode Plaster, "Type D, or Type V Cementitious Mixtures," may be used in accordance with construction details shown in Guide No. 40, U18.3, to meet the published fire rating.

Red Top Firecode Plaster provides shop primed steel with adequate protection from corrosion and eliminates the need for a job primer coat. (Test data available on request.)

One-coat application without hand tooling on steel floor units, and only two-coat application on beams and columns, as well as higher fire-retardant efficiency resulting in lower material usage, contribute to lower applied fireproofing costs than with other available materials.

Texture: Although not generally considered a finished surface, a pleasing spray texture can be accomplished. Acoustical Plaster may also be applied as a finish coat. Surface may also be spray painted with TEXOLITE Standard.

Red Top Firecode Plaster is available in two types—

Firecode Plaster, in which Perlite is the aggregate.

Firecode "V" Plaster in which Vermiculite is the aggregate.

Fire Ratings are interchangeable on the two types.

LIMITATIONS OF USE

1. Red Top Firecode Plaster must be applied under conditions acceptable to plastering—protected from freezing.
2. Red Top Firecode Plaster is designed for use on ceilings, beams, or columns not subject to contact, excessive high humidity, moisture, or vibration.

TECHNICAL DATA—

RED TOP FIRECODE PLASTER

Density (average) applied dry..................27#/cu. ft.

Insulation Value "k" factor.....................80

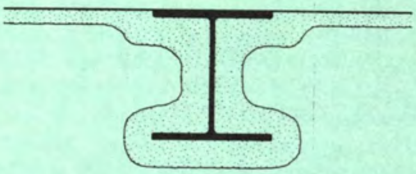
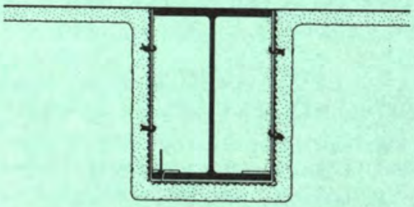
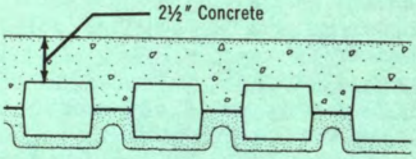
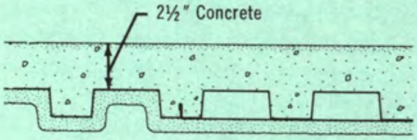
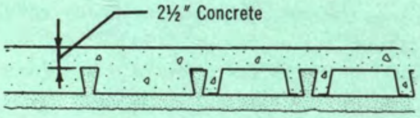
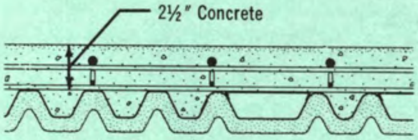
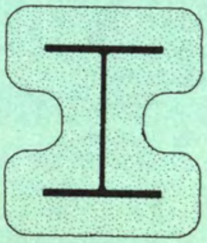
SOUND ABSORPTION

Frequency	125	250	500	1000	2000	4000	NRC
Sound Absorption	.42	.34	.37	.46	.61	.62	.45

Sound absorption; from tests at a nationally recognized independent laboratory.

*T. M. Reg. U. S. Pat. Off.

RED TOP FIRECODE PLASTER(1)

CONSTRUCTION	DESCRIPTION	RATING	THICKNESS	AUTHORITY
	UL Design 32-3 Contour UL Design C-112 Contour UL Design 24-3 Contour	3 hrs. 4 hrs. 4 hrs.	1¼″ 1¼″ 1½″	UL 4142-7 ULC CR-252 UL 4142-4
	UL Design 23-3 Boxed	4 hrs.	1″	UL 4142-4
	UL Design 10-2 Contour UL Design 22-3 Contour	2 hrs. 3 hrs.	½″ ⅝″–¾″	UL 4142-1 UL 4142-3
	UL Design 14-2 Contour ULC Design C-112 Contour	2 hrs. 3 hrs.	¾″ ¾″–1″	UL 4142-2 ULC CR-252
	UL Design 32-3 Level	3 hrs.	¾″	UL 4142-7
	UL Design 23-3 Contour	3 hrs.	¾″	UL 4142-4
	UL Design 13-3 Contour UL Design 15-4 Contour	3 hrs. 4 hrs.	2⅛″ 2½″	UL 4142-5 UL 4142-6

***T. M. Reg. U. S. Pat. Off.**

(1) Above test data is the result of tests completed as of 8-31-63. Consult your U.S.G. Representative for current data.

SPECIFICATIONS

I. SCOPE—Unless otherwise shown on the drawings, all walls and ceilings shall be plastered as herein described.

II. GENERAL PROVISIONS—In cold weather, the temperature of the building shall be maintained in the uniform range above 55° for an adequate period prior to the application of plaster, while the plastering is being done, and after the plaster is dry. The heat shall be well distributed in all areas, with deflection or protective screens used to prevent concentrated or irregular heat on plaster areas near source. When required, heat shall be furnished by . . .

Proper protection should be provided during plastering for finished door and window frames and other designated areas which do not receive a plaster finish.

Ventilation shall be provided to properly dry the plaster during and subsequent to its application. In glazed buildings, this shall be accomplished by keeping windows open sufficiently to provide air circulation; in enclosed areas lacking normal ventilation, provisions must be made to mechanically remove moisture laden air.

If glazed sash are not in place and the building is subjected to hot, dry winds or temperature differentials from day to night of 20° F or more, openings shall be screened with cheesecloth or similar material.

III. SURFACE PREPARATION

a. Monolithic concrete to which BONDCRETE is to be applied shall be cleaned of all dust, loose particles and other foreign matter. Laitance and efflorescence shall be removed by washing with a 10% solution of commercial muriatic acid and water, and then cleaning with water to remove all traces of acid. Grease and oil shall be completely removed. Concrete surfaces shall have sufficient roughness to provide proper bond. If surfaces are not rough, they shall be hacked or bush-hammered, or dash coated with Portland cement grout composed of one part of cement and one and one-half parts of fine sand mixed to a mushy consistency. This coat shall be kept damp for at least two days immediately following its application and then allowed to dry. Before application of the plaster, the surface shall be evenly dampened if necessary to reduce suction.

b. Unit masonry surfaces that exhibit high suction may be moderately wetted immediately before plastering.

c. Where RED TOP AUDICOTE Acoustical Plaster is indicated for application direct to smooth monolithic concrete, reinforcing bar chair legs shall be either galvanized or coated with rust inhibitive paint and use of nails or other raw steel against forms or surface of concrete held to a minimum. Where metal is exposed in spite of these precautions, and where AUDICOTE is to be applied directly against corner beads or other metal accessories, the metal should be treated with one coat of aluminum paint.

IV. GROUNDS—Plaster thicknesses shall be as shown on plans; however, in no case shall the grounds be less than:

Metal Lath and Wire Fabric	—⅝″ (from face of lath).
Gypsum Lath	—½″
Long Length Gypsum Lath	—¾″
Masonry Units	—⅝″
Monolithic Concrete Ceilings	—⅛″ (⅜″ maximum)
Monolithic Concrete Walls	—⅛″ (⅝″ maximum)
TUFCON Base	—1/16″
Acoustical Plaster	—½″

V. MATERIALS—Plaster and all cementitious material shall be stored under cover, up off the ground or floor, and kept dry until ready for use.

a. Basecoat Plaster shall be:
(RED TOP Wood Fiber), (RED TOP Cement Plaster), (STRUCTO-LITE), (BONDCRETE) as manufactured by the UNITED STATES GYPSUM COMPANY.

b. Aggregate shall be:
(Sand), (Perlite), (Vermiculite) meeting ASTM C-35 requirements. Sand for float finishes shall be a graded silica sand passing a (30 mesh) (20 mesh) screen.

c. Water shall be clean and fit to drink, free from oil, acid, alkali or vegetable materials.

d. Finish Lime shall be:
(IVORY), (GRAND PRIZE), (RED TOP) as manufactured by the UNITED STATES GYPSUM COMPANY.

e. Gauging Plaster shall be:
(STRUCTO-GAUGE), (Keenes Cement), (STAR), (CHAMPION), (RED TOP) as manufactured by the UNITED STATES GYPSUM COMPANY.

f. Prepared Finish shall be ORIENTAL Interior White Finish as manufactured by the UNITED STATES GYPSUM COMPANY.

g. Acoustical Plaster shall be:
(HI-LITE), (AUDICOTE) as manufactured by the UNITED STATES GYPSUM COMPANY.

i. Plaster Ornaments and Mouldings shall be made with RED TOP Moulding Plaster as manufactured by UNITED STATES GYPSUM COMPANY.

j. Exterior Stucco Finish shall be ORIENTAL Exterior Stucco as manufactured by the UNITED STATES GYPSUM COMPANY.

VI. BASECOAT PROPORTIONS

a. RED TOP Wood Fiber Plaster shall be mixed (neat) (up to 100:1 with sand) for scratch coat over (metal lath) (gypsum lath) and (neat) (100:1 with sand) for brown coat.
For application over masonry bases, use 1 cu. ft. of sand per 100 lbs. of plaster.

b. STRUCTO-BASE, or RED TOP Cement Plaster shall be mixed in the proportions shown in the chart on page 3.

c. STRUCTO-LITE shall be mixed with water only.

d. BONDCRETE shall be mixed with water only.

e. Portland Cement Mortar shall be mixed in the proportions as outlined on page 5.

VII. GROUTING—Grout shall consist of STRUCTO-LITE or RED TOP Cement Plaster sanded 100:2.

a. All steel door frames in solid plaster and steel stud partitions prior to lathing, and in masonry partitions as the masonry units are laid up.

b. All 2½ inch metal base shall be grouted.

VIII. MIXING OF BASECOAT—Basecoat plasters may be hand mixed or mechanically mixed to a uniform consistency following the manufacturer's directions.

IX. BASECOAT APPLICATION—Either hand or machine application methods may be used.

Three coats are required on metal lath, edge supported gypsum lath on ceilings, and on ⅜ and ½ inch Long Length gypsum lath.

Three-coat work is desirable on all gypsum lath.

Two-coat work is acceptable on masonry plaster bases and all gypsum lath except as previously indicated.

a. **Two-coat work:** over gypsum lath and masonry, the base (first) coat shall be applied with sufficient material and pressure to form a good bond to the base and to cover well, and then be doubled back to bring the plaster out of grounds, straightened to a true surface with rod and darby without the use of additional water, and left rough to receive the finish (second) coat. (High suction masonry bases may require moderate wetting of surface before plastering.)

Three-coat work: the scratch (first) coat shall be applied with sufficient material and pressure to form good full keys on metal lath, and a good bond on other bases, and then be cross-raked. The brown (second) coat shall be applied after the scratch (first) coat has set firm and hard, brought out to grounds and straightened to a true surface with rod and darby without the use of additional water, and left rough to receive the finish (third) coat.

b. **Optional Inclusions:**

1. *Solid Long Length ROCKLATH Partition:* The scratch coat shall be applied ⅜-inch thick, with a maximum set of 3 hours, to each side of the lath, simultaneous, if possible, or within a 3 hour interval. Cross-rake lightly horizontally only. The brown coat shall be applied to the unbraced side after the scratch coats have set and partially dried, (not less than 16 hours). After brown coat has set firmly (not less than 3 hours) carefully remove the braces and brown coat the second side. Brown coat shall be brought out to a true plane and left rough.
2. *Solid Studless Metal Lath Partition:* The scratch coat shall be applied to the lath side and partially dry. The brown coat shall then be applied to the side opposite the braces, allowing it to set thoroughly before removing temporary braces. Next the brown coat shall be applied to braced side to bring the plaster out to grounds, straightened to a true surface with rod and darby without the use of additional water, and left rough to receive the finish coat.
3. *Solid Channel Stud Metal Lath Partition:* The scratch coat shall be applied to lath side and allowed to set and partially dry. The back-up coat shall then be applied to the channel side to full grounds, ½″ over channels, in not less than two operations and allowed to set. The brown coat on lath side shall then be applied to bring the plaster out to grounds, straightened to a true surface with rod or darby without the use of additional water, and left rough to receive the finish coat.
4. *Resilient ROCKLATH Plaster Base Ceiling:* Use three-coat method only, allowing the scratch coat to set and partially dry before applying brown coat.
5. *BRACETITE System Ceiling:* The three-coat method is recommended. If the two-coat system is used, a minimum of 20 minutes must be allowed before doubling back and the setting time of the basecoat must not exceed 3 hours.
6. *Monolithic Concrete:* Surfaces of walls and columns shall have a scratch coat of BONDCRETE, followed immediately with a brown coat of RED TOP Cement Plaster and sand 100:2 troweled into the BONDCRETE while it is soft and unset. Brown coat shall be brought out to a true level surface without an application of water. Cross-rake the surface. Ceiling surfaces shall have a coat of BONDCRETE scratched in thoroughly, doubled back to a true level surface. Cross-rake the surface.
7. *Portland Cement Basecoats* shall be applied in two coats. Scratch coat shall be cross-raked and after setting damp cured for not less than 48 hours. Brown coat shall be damp cured after setting for not less than 48 hours.
8. *Where plaster is flush* with metal base, metal door frames, etc., a groove shall be made at the junction to reduce the possibility of chipping. Basecoat plaster shall be cut free from these metal sections before the plaster sets.

X. PREPARATION OF LIME

a. **IVORY Lime** shall be mixed with approximately 5½ to 6 gallons of water for each 50 lb. bag. Machine mix or box soak for immediate use, or may soak overnite.

b. **GRAND PRIZE or RED TOP Lime** shall be box soaked or machine mixed using approximately 6 gallons of water per 50 lb. bag, and allowed to soak for 16 hours.

XI. PROPORTIONS OF FINISH COATS

a. **Gypsum gauged lime putty finish** shall be mixed in the proportions of 100 lbs. of gauging plaster to 200 pounds of dry lime. Over lightweight aggregate basecoats, ½ cu. ft. of perlite fines or 50 pounds of No. 1 silica sand per 100 pounds of gauging plaster shall be added.

b. **Medium hard STRUCTO-GAUGE lime putty finish** shall be mixed in the proportion of 100 pounds of STRUCTO-GAUGE to 200 pounds of dry lime.

c. **Hard STRUCTO-GAUGE lime putty finish** shall be mixed in the proportion of 100 pounds of STRUCTO-GAUGE to 100 pounds of dry lime.

d. **Standard Hard Keene's cement lime putty finish** shall be mixed in the proportion of 100 pounds of Keene's cement to 100 pounds of dry lime.

e. **Medium Hard Keene's cement lime putty finish** shall be mixed in the proportion of 100 pounds of Keene's cement to 50 pounds of dry lime.

f. **Extra Hard Keene's cement lime putty finish** shall be mixed in the proportion of 100 pounds of Keene's cement to 25 pounds of dry lime.

g. **Keene's-lime-sand finish** shall be mixed in the proportion of 100 pounds of Keene's cement to 50 pounds of dry lime and 400 pounds of sand.

h. **ORIENTAL Interior White Finish** shall be mixed with clean water only to proper application consistency.

i. **ORIENTAL Exterior Stucco** shall be mixed with clean water only to proper application consistency.

j. **TUFCON Finish and Catalyst** shall be mixed in accordance with the manufacturer's directions.

k. **HI-LITE Acoustical Plaster** shall be machine mixed to the proper consistency and density according to the manufacturer's directions.

l. **AUDICOTE Acoustical Plaster** shall be mixed for hand application or machine application according to the manufacturer's directions.

XII. APPLICATION OF FINISH COATS

a. **Trowel Finish coats** shall be scratched in thoroughly and immediately doubled back to fill out to a smooth, dense surface for decoration free of surface blemishes and irregularities. Thickness shall be no more than ⅛ inch. Keenes Cement Finishes shall be troweled until the material sets.

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*T.M. Reg. U.S. Pat. Off.

b. **Float Finish coats** shall be scratched in thoroughly and immediately doubled back to a true, even surface. Float using a (shingle), (cork), (wood), (carpet) or (rubber) float to bring aggregate to the surface to produce a finish of uniform texture free of slick spots, cat faces, and other blemishes. Use water sparingly in natural color, and no water shall be used on colored finishes.

c. **Machine Applied Spray Finishes** shall be uniformly applied to produce a texture approved by the architect.

d. **TUFCON Finish** shall be machine applied to a thickness of 1/16 inch, in accordance with the manufacturer's directions.

e. **Acoustical Plasters** shall be applied in not less than two coats, to full ½ inch grounds, following the manufacturer's directions.

f. **Ornamental Plastering:** Ornamental plaster shall be executed in accordance with the full-sized details shown on the drawings. Cornices and moldings shall be run full, straight and true with molding plaster, using clean cut metal templets conforming to the profiles shown on the drawings. Lines shall be in alignment, with true intersections, and accurate mitres at corners and angles. Enriched ornamental work which cannot be run in place shall be cast with casting plaster in gelatine molds. The work shall be solidly backed with jute or burlap, shall be properly reinforced with galvanized iron, and shall be securely stuck and wired in place with copper wires not lighter than 16 gauge. All joints shall be carefully made and neatly pointed so as to be invisible. All rough spots shall be eliminated with fine sandpaper, and the entire work left in proper condition, ready for decoration.

XIII. FIREPROOFING PLASTER—RED TOP FIRECODE Plaster as manufactured by the UNITED STATES GYPSUM COMPANY shall be machine applied to the underside of all steel floor sections, beams and columns as shown on plans or herein specified. Surfaces shall be clean, dry and free of grease or oil. FIRECODE Plaster shall be mixed and applied according to the manufacturer's directions to average thicknesses shown on plans but not less than:

Columns
Beams (caged)
Beams (direct)
Cellular Steel Floor

Note: Indicate the thicknesses required by selecting from data on page 9.

XIV. PATCHING—Point up around trim and other work. Cut out and patch defective and damaged plaster. Patching of plaster shall match existing work in texture and finish and joinings with plaster previously applied shall finish flush and smooth.

XV. COMPLETION—At the completion of the finish plaster work, all plaster shall be cleaned from beds, screeds, metal base and metal trim, leaving work ready for decoration by others. All plaster rubbish shall be removed from the building, leaving floors broom clean. Excess material, scaffolding, tools and other equipment shall be removed from the building and job site.

"STRUCTO-LITE," "RED TOP," "BONDCRETE," "PYROBAR," "ROCKLATH," "ORIENTAL," "FIRECODE," "IVORY," "GRAND PRIZE," "MORTASEAL," "CHAMPION," "STAR," "BRACE-TITE," "TRUSSTEEL," "HI-LITE," "AUDICOTE," "TEXOLITE" and "USG" are registered trade-marks.

"STRUCTO-GAUGE" is a trade-mark owned by United States Gypsum and is used by it to distinguish products of its manufacture.

"STRUCTO-LITE" identifies the particular prepared plaster manufactured only by United States Gypsum.

"RED TOP" identifies the particular plasters and finishes manufactured only by United States Gypsum.

"BONDCRETE" identifies the particular plaster for concrete surfaces manufactured only by United States Gypsum.

"PYROBAR" identifies the particular gypsum partition tile manufactured only by United States Gypsum.

"ROCKLATH" identifies the particular gypsum lath or plaster base manufactured only by United States Gypsum.

"ORIENTAL" identifies the particular colored finishes manufactured only by United States Gypsum.

"FIRECODE" identifies the particular prepared plaster manufactured only by United States Gypsum.

"AUDICOTE" and "HI-LITE" identify the particular acoustical plasters manufactured only by the United States Gypsum Company.

"IVORY" and "GRAND PRIZE" identify the particular hydrated lime manufactured only by the United States Gypsum Company.

"MORTASEAL" identifies the particular masonry lime manufactured by United States Gypsum.

"CHAMPION" and "STAR" identify the particular white gauging plasters manufactured only by the United States Gypsum Company.

"STRUCTO-GAUGE" identifies the particular prepared gauging plaster manufactured only by United States Gypsum.

"TRUSSTEEL" identifies the particular truss designed stud manufactured only by the United States Gypsum Company.

"BRACE-TITE" identifies the particular attachment clips manufactured only by the United States Gypsum Company.

"TEXOLITE" identifies the particular paint manufactured only by United States Gypsum Company.

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A.I.A. File 39-B

TECHNICAL INFORMATION

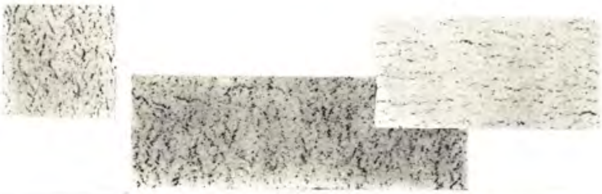
SOUND CONTROL PRODUCTS

UNITED STATES GYPSUM

1964

A.I.A. File 39-B

SOUND CONTROL PRODUCTS

PRODUCT	**ACOUSTONE* Mineral Acoustical Tile** ACOUSTONE "F"—an incombustible mineral acoustical tile with a fissured surface resembling travertine marble. 			**ACOUSTONE db** Superior sound attenuation and reflective insulation produced by the addition of foil backing to ACOUSTONE "F"	**ACOUSTONE 90 and 120** Special ACOUSTONE Tile rated by UL for 1, 1½, and 2 hour designs
PAGES	4, 5, 6	4, 5, 6	4, 5, 6	4, 5, 6	5, 12, 13
SIZE AND EDGE[1]	¾" x 12" x 12" ¾" x 12" x 24" SQ or BB(1 & 2)	¾" x 12" x 12" ¾" x 12" x 24" SQ or BB(2)	¾" x 12" x 23⅞"—SQ ¾" x 12" x 35⅞"—SQ	Foil backing available on all ACOUSTONE "F" sizes.	¾" x 12" x 12"—SQ or BB
INSTALLATION	Adhesive	Concealed Z-spline Concealed Accessible	Exposed Z-Spline	Same as recommended ACOUSTONE "F" metal suspension systems.	Concealed Z-Spline Exact details, See pages 12 and 13
FINISH	Painted white or ivory (other colors available on special order)	Painted white or ivory (other colors available on special order)	Painted white or ivory (other colors available on special order)	Painted white or ivory (other colors available on special order)	Painted white or ivory (other colors available on special order)
LIGHT REFLECTANCE	86% White	86% White	86% White	86% White	86% White
NRC SPECIFICATION RANGE	.65-.75 Mtg. no. 1	.70-.80 Mtg. no. 7	.70-.80 Mtg. no. 7	.70-.80 Mtg. no. 7	.70-.80 Mtg. no. 7
SOUND ATTENUATION **Eleven Frequency Average**	48.0 db(3)	31.5 db (CZS)	29.7 db (12" x 24")	45.6 db (12" x 24")	42.8 db (120—12" x 12")
Sound Transmission Class	47(3)	29 (CZS)	26 (12" x 24")	40 (12" x 24") See page 7	See page 5
HEAT CONDUCTIVITY	k=0.35	k=0.35	k=0.35	See page 4	—
FIRE RETARDENT CLASS	—	—	—	—	"90"—1 hour (WOOD) "90"—1½ hour (CONCRETE) "120"—2 hour (CONCRETE)
FIRE RESISTANCE RATINGS **Federal Spec.**	Class A	Class A	Class A	Class A	Class A
Flame Spread	15	15	15	15	15
MAINTENANCE	Cleaned easily with vacuum cleaner or damp sponge. Can be repeatedly spray or brush painted.	Cleaned easily with vacuum cleaner or damp sponge. Can be repeatedly spray or brush painted.	Cleaned easily with vacuum cleaner or damp sponge. Can be repeatedly spray or brush painted.	Cleaned easily with vacuum cleaner or damp sponge. Can be repeatedly spray or brush painted.	Cleaned easily with vacuum cleaner or damp sponge. Can be repeatedly spray or brush painted.
LIMITATIONS	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.

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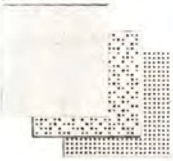
(1) BB—Butt Bevel Edge SQ—Square Edge

(2) ¾" x 12" x 24"—BB normally centerscored

(3) Cemented to ⅝" SHEETROCK* FIRECODE* Gypsum Wallboard

*T.M. Reg. U.S. Pat. Off.

MOTIF'D* ACOUSTONE TILE Exclusive designer patterns are "etched" into the incombustible mineral surface. 	**ACOUSTONE FINESSE TILE** Selected ACOUSTONE created for fine textured ceiling appearance. 	**ACOUSTONE GLACIER TILE** Deeply textured ACOUSTONE providing factory controlled rough ceiling design. 	**TEXTONE VINYL FACED CEILING BOARD** 	**AUDITONE*** Wood fiber acoustical tile in the three basic surface perforation patterns. 	**PERFATONE*** Perforated steel (or aluminum) metal pans with mineral fiber sound absorbing pads.
4, 5, 6	5, 6	5, 6	7	16, 17	15
¾" x 12" x 12"—SQ ¾" x 12" x 24"—SQ	Available on all ACOUSTONE "F" sizes	¾" x 12" x 12"—SQ ¾" x 12" x 24"—SQ	⅜" x 23⅝" x 23⅝" ⅜" x 23⅝" x 47⅝"	½" x 12" x 12"—BB ¾" x 12" x 12"—BB ½" x 12" x 24"—T & G ¾" x 12" x 24"—T & G	2½" x 12" x 12" 2½" x 12" x 24" 2½" x 12" x 36" 2½" x 12" x 48" BB & Scored
Adhesive Concealed Z-Spline Concealed accessible	Same as recommended ACOUSTONE "F" installation methods	Concealed Z-Spline	Exposed Grid	Adhesive; Staple, nail, or screw; and Metal suspension—T & G runner	Metal T-Bar Suspension
Painted white or ivory (other colors available on special order)	Painted white or ivory (other colors available on special order)	Painted white or ivory (other colors available on special order)	White Bark Textured Vinyl	Painted white	Painted white or unpainted
70% White (Striated)	87% White	71% White	82% White	See page 16	70% White
.65-.75 Mtg. no. 1 .75-.85 Mtg. no. 7	.60-.70 Mtg. no. 7	.70-.80 Mtg. no. 1 .80-.90 Mtg. no. 7	.55-.65	See page 17	.80-.90 Mtg. no. 7
43.2 db (#33—12" x 12")	38.1 db (12" x 12")	39.3 db (12" x 12")	—	44.7 db (12" x 24")	27.5 db
See page 5	34 (12" x 12")	36 (12" x 12")	—	41 (12" x 24") See page 17	25
k = 0.35	—	—	—	k = 0.38	—
—	—	—	—	—	—
Class A	Class A	Class A	Class B	Class C—Random & Pin Perforated Class C (FRF)—Regular Drill Class D—Without Special Finish	Class A
15	15	15	8	—	15
Cleaned easily with vacuum cleaner or damp sponge. Can be repeatedly spray or brush painted.	Cleaned easily with vacuum cleaner or damp sponge. Can be repeatedly spray or brush painted.	Cleaned easily with vacuum cleaner or damp sponge. Can be repeatedly spray or brush painted.	Cleaned easily with soap and water	Cleaned with putty or paste type wallpaper cleaner. Can be repeatedly spray or brush painted	Cleaned easily with soap and water or other commonly used paint cleaners. Can be repeatedly spray or brush painted.
Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.	See Page 7	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.	Use aluminum units where water might impinge on surface.

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*T. M. Reg. U. S. Pat. Off.

ACOUSTONE*
MINERAL ACOUSTICAL TILE

DESCRIPTION

Acoustone (¾″ thick) is available in sizes 12″ x 12″, 12″ x 24″, and 12″ x 36″. Edges may be furnished either square or bevel. The 12″ x 24″ and 36″ can be scored to resemble 12″ x 12″ units. A standard kerf accommodates splines for both mechanical and adhesive applications.

FUNCTION AND UTILITY

Sound Absorption—see table
Sound Attenuation—see table

USG Tile have been tested in accordance with the ASTM E90-61T procedure recommended by the AMA. Both the eleven frequency db average and the sound transmission class are reported in the table. Of special interest is the high STL values of those USG Tile with the exclusive aluminum foil backing, generally superior to overage non-load bearing partitions.

Fire Resistance—Acoustone "F" carries a Class A rating in accordance with Fed. Spec. SS-A-118b and Interim Fed. Spec. SS-A-00118c and an ASTM E84-61T flame spread rating of "15," incombustible.

Thermal Resistance—Acoustone Tile "db" with the reflective foil back surface provides added resistance against winter heat loss—equal to a full inch of gypsum. The resistance to summer heat gain is even greater—equal to over an inch of wood fiber roof insulation. This "built-in" advantage in using Acoustone "db" can quickly be translated to dollar savings in heating and cooling costs.

Resistance (R) to heat flow†

	ACOUSTONE "db"	Regular ¾″ Mineral Tile (without foil)
Winter (upward)	4.07	3.36
Summer (downward)	7.61	3.98

†1960 ASHRAE Guide (includes tile and plenum air space)

Washability—Factory-painted Motif'd* Acoustone Tile and Acoustone "F" may be washed with a damp sponge or cleaned with a vacuum cleaner, chemical rubber sponge, (used dry), or putty or paste type wallpaper cleaner. Accidental spotting or soiling can usually be removed by this method before over-all redecoration is necessary.

Paintability—Motif'd Acoustone and Acoustone "F" mineral acoustical tile, may be brush or spray painted many times without appreciable loss of sound absorption at 500 cycles per second or in the Noise Reduction Coefficient. The effect of repeated coats of paint on Acoustone "F" and other materials may be found in Research Paper RP-1298 "Effect of Paint on Sound Absorption of Acoustical Materials," which is obtainable from the National Bureau of Standards, U. S. Department of Commerce, Washington, D. C. Oil, casein, resin emulsion or spirit thinned paints may be used with recommended painting procedures.

Resistance to Soiling and "Breathing." The smooth, painted finish of Motif'd Acoustone and Acoustone "F" resists soiling and limits objectionable air travel ("breathing") through the face of the tile.

LIMITATIONS OF USE

Motif'd Acoustone and Acoustone "F", mineral acoustical tiles, are designed for normal moisture conditions. They should not be used where they will be exposed to excessively high humidity. They should not be used below wainscot height or where they may be damaged by impact, abrasion or tampering. Acoustone should not be installed until moisture resulting from plastering, concrete or terrazzo work, etc., is no longer a hazard.

Modern architectural practice has often created a "critical lighting" condition for acoustical ceilings. It is important to visualize the final room furnishings and lighting when selecting a tile or suspension system.

ACOUSTONE FINESSE TEXTURE TILE

DESCRIPTION

Acoustone Finesse is a specially selected, natural fissured mineral tile. It is identical to Acoustone "F" in most of its physical characteristics. This product is designed to meet the desire for a finely textured ceiling surface by reducing the fissuring to a minimum acceptable for sound absorption values. It is available in all Acoustone "F" sizes and may be suspended by all recommended Acoustone "F" systems.

FUNCTION AND UTILITY

Acoustone Finesse technical data is in the table opposite. Fire resistance, thermal resistance, washability, paintability, soiling resistance, and limitations are basically the same as those of Acoustone "F" found on this page.

FINESSE

GLACIER

ACOUSTONE GLACIER TEXTURE TILE

DESCRIPTION

Acoustone Glacier is a factory controlled acoustical tile providing the deep texture generally available only from job applied "wet" construction. This rich texture conceals joint lines and provides a monolithic ceiling appearance. It is recommended that this tile be suspended by the USG concealed Z-spline method.

FUNCTION AND UTILITY

Acoustone Glacier technical data is in the table opposite. Fire resistance, thermal resistance, paintability, sailing resistance, and limitations are basically the same as those of Acoustone "F" found on this page. Because of the deep surface texture, washing this tile is not recommended.

MOTIF'D ACOUSTONE available in sq. edge, 12″ x 12″ size.

*T.M. Reg. U.S. Pat. Off.

SOUND ABSORPTION COEFFICIENTS

ACOUSTONE* PRODUCT	MOUNT-ING	WEIGHT PSF	NRC SPEC. RANGE	SOUND ABSORPTION COEFFICIENTS AT cps					
				125	250	500	1000	2000	4000
ACOUSTONE "F"	1 7	1.30 1.39	.70–.80 .70–.80	.03 .68	.27 .67	.83 .65	.99 .84	.82 .87	.71 .74
MOTIF'D* ACOUSTONE	1 7	1.30 1.34	.65–.75 .75–.85	.03 .80	.26 .69	.77 .66	.93 .86	.83 .90	.78 .87
ACOUSTONE db	7	1.29	.70–.80	.58	.48	.67	.99	.92	.85
MOTIF'D ACOUSTONE db	7	1.35	.65–.75	.58	.46	.69	.91	.80	.76
ACOUSTONE 90	7	1.33	.75–.85	.83	.73	.68	.87	.93	.78
ACOUSTONE 120	7	1.32	.70–.80	.45	.46	.72	.97	.87	.90
ACOUSTONE GLACIER	1 7	1.42	.70–.80 .80–.90	.04 .60	.20 .73	.73 .73	.99 .93	.88 .88	.89 .90
ACOUSTONE db GLACIER	7	1.63	.75–.85	.30	.46	.77	.99	.89	.90
ACOUSTONE FINESSE	7	1.42	.60–.70	.78	.57	.59	.73	.70	.60

SOUND ATTENUATION DATA

ACOUSTONE PRODUCT	SUSPENSION SYSTEM	SIZE	SOUND TRANS. CLASS (1)	ELEVEN FREQUENCY AVERAGE	ATTENUATION (Decibels) AT cps										
					125	177	250	354	500	707	1000	1414	2000	2828	4000
ACOUSTONE "F"	Adhesive Concealed Z-Spline Exposed Z-Spline	12" x 12" 12" x 24" 12" x 24"	47 29 26	48.0 db 31.5 db 29.7 db	25 23 24	33 27 30	36 26 23	41 23 21	46 26 24	49 26 25	54 29 25	60 33 30	60 38 34	64 45 42	61 52 47
ACOUSTONE db	Concealed Z-Spline	12" x 12"	39	43.2 db	26	32	33	33	37	42	45	50	56	63	59
	Concealed Z-Spline	12" x 24"	40	45.5 db	31	36	33	34	41	44	49	54	56	64	59
	Exposed Z-Spline Exposed Grid	12" x 24"	38 34	42.8 db 37.4 db	27 25	36 28	32 25	32 28	37 32	39 37	42 39	50 43	53 47	62 54	59 54
MOTIF'D ACOUSTONE db (No. 33)	Concealed Z-Spline	12" x 12"	39	43.2 db	26	34	32	33	38	41	45	50	54	62	59
ACOUSTONE 120	Concealed Z-Spline	12" x 12"	39	42.8 db	27	30	33	33	38	41	44	50	54	62	59
ACOUSTONE GLACIER db	Concealed Z-Spline	12" x 12"	36	39.3 db	24	30	31	30	34	37	41	45	50	58	54
ACOUSTONE FINESSE	Concealed Z-Spline	2" x 12"	34	38.1 db	26	30	30	28	30	32	35	41	48	59	60

(1) Rated in accordance with ASTM E90-61T
SOURCE: Official AMA acoustical testing laboratory

Mounting No. 1 Cemented to gypsum board
Mounting No. 7 Metal suspension system

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*T. M. Reg. U. S. Pat. Off.

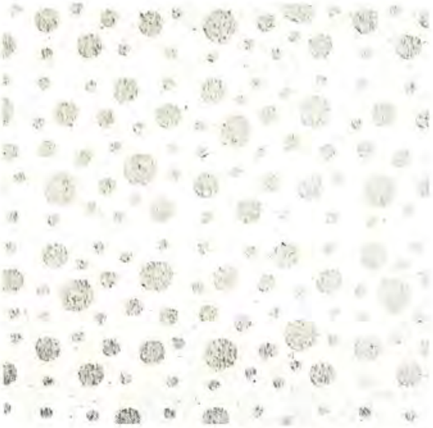
ACOUSTONE*
MINERAL ACOUSTICAL TILE

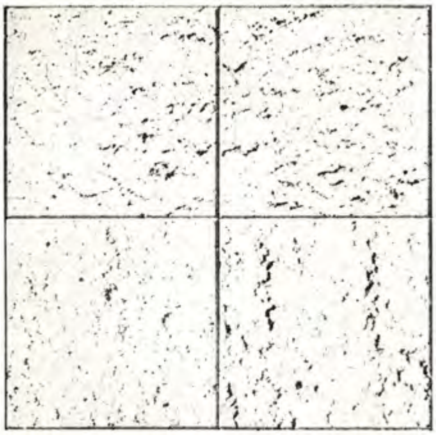
THE BEAUTY OF NATURAL FISSURES

ACOUSTONE "F", mineral acoustical tile, is manufactured by binding mineral fibers into a lightweight, highly sound absorbent tile. The fissured surface closely resembles that of travertine marble. No two tiles are identical in texture; the pattern is as natural as the veining of fine marble or the grain of wood. Each tile is finish-painted at the factory. Available with accurately formed bevel or square edges.

PATTERNS WITH TEXTURE

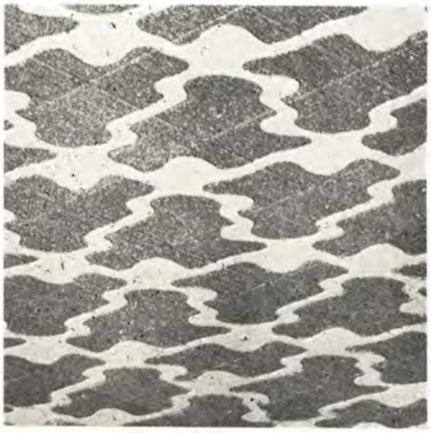
MOTIF'D* ACOUSTONE mineral acoustical tile, is produced by altering the surface of standard ACOUSTONE "F" tile by an exclusive USG process resulting in an integrally permanent decoration. The finished product is mill painted. The pattern selected is accented by the varying shadows caused by directional changes in the source of light rather than by differences in applied color. Custom patterns can be produced to meet individual requirements.


GALAXY design No. 33

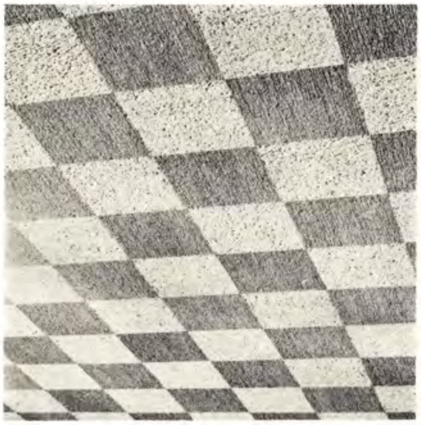

Beveled Edge

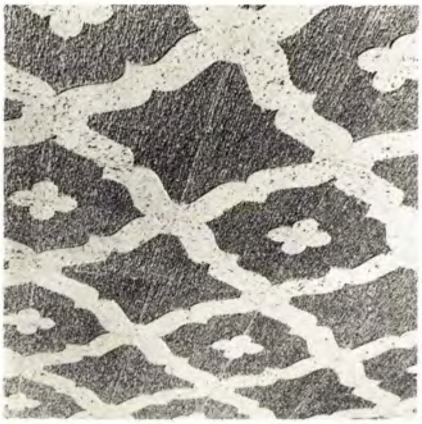
THE VARIABLE EFFECT

The unretouched photograph below was made of an installation of MOTIF'D ACOUSTONE tile. Although all the tile are the same, the installation is so orientated to produce the effect as shown below. Such changes in degrees of contrast are usually apparent in every MOTIF'D ACOUSTONE installation. This "mobile" effect shifts not only with light changes, but with changes in position of the observer. The pattern, therefore, never becomes monotonous.


FANTASIA design No. 40

Square Edge


STRIATED design No. 19


GEORGIAN design No. 2

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*T. M. Reg. U. S. Pat. Off.

TEXTONE* CEILING PANELS

DESCRIPTION

TEXTONE Panels are plastic covered, rigid, incombustible gypsum core units. The white vinyl plastic covering has an embossed texture which gives a high degree of reflectivity while breaking up light rays, imparting a soft even appearance. TEXTONE panels fit easily into standard inverted "T" grid construction. Available with or without sound absorbing properties, TEXTONE Acoustical Panels and TEXTONE Plain Panels look identical on the face and are designed to be interchangeable in a single ceiling area. TEXTONE Plain Panels are used for cutting and fitting at borders, lights, vents, etc. TEXTONE Plain and Acoustical Panels give the designer a means of providing "live" (non-acoustical) areas in an acoustical ceiling while maintaining a uniform appearance from below.

The over-all absorption level also can be reduced by alternating acoustical and plain panels for areas that would otherwise be "over-treated".

SIZES

TEXTONE Panels are available in the following sizes:

TEXTONE Acoustical Panels	⅜″ x 23⅝″ x 23⅝″ ⅜″ x 23⅝″ x 47⅝″
TEXTONE Plain Panels	⅜″ x 23⅝″ x 23⅝″ ⅜″ x 23⅝″ x 47⅝″

FUNCTION AND UTILITY

Sound Absorption—TEXTONE Acoustical Panels have special diaphragmed perforations which make it possible to dissipate unwanted sound in the air space above the ceiling. Through this unique principle, TEXTONE provides exceptionally good absorption at the low and middle frequency ranges.

Maintenance—The vinyl plastic surface of TEXTONE Panels is treated to resist soiling. If the panels do become dirty, they can be sponged off in place or the entire ceiling can be removed and cleaned overnight without disturbing anyone within the working area during working hours. Commonly used household cleaners and detergents can be used for cleaning. Do not use organic solvent materials to clean plastic.

Versatility—Sound absorption may be located within a ceiling area according to the requirements of the room by mixing TEXTONE Acoustical and TEXTONE Plain Panels. The panels will look identical from below.

TEXTONE Panels afford complete accessibility to the area above the ceiling.

Economy—TEXTONE Ceilings are easily and quickly installed, saving time and labor. They are also almost 100% salvable.

The use of the less expensive TEXTONE Plain Panels can result in important savings where sound absorption is not a factor or where the plain and acoustical panels can be mixed for lower absorption levels.

Fire Resistance—TEXTONE Panels are rated "incombustible" having a flame spread rating of "8" tested in accordance with the ASTM E 84 "Tunnel Test" procedure by the official AMA laboratory.

LIMITATIONS OF USE

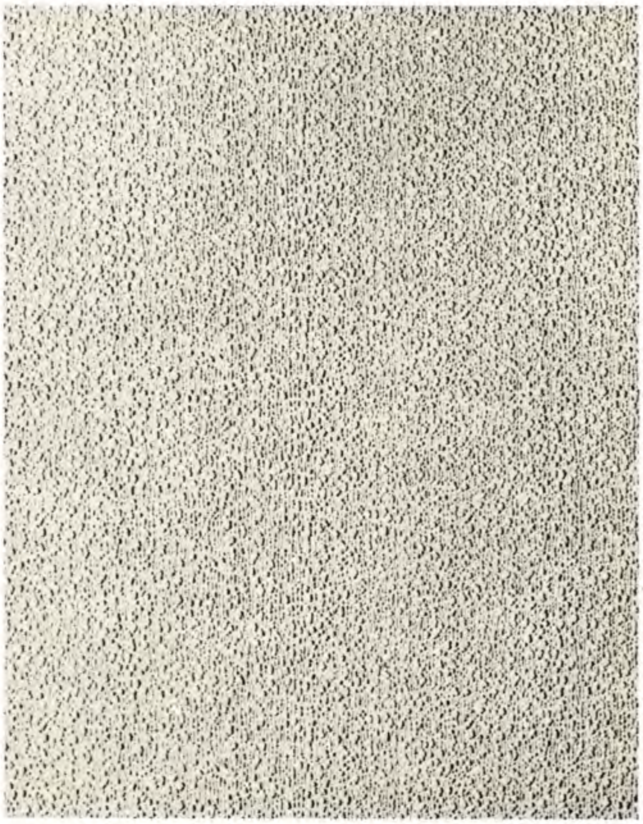
TEXTONE Acoustical Panels should not be used in areas where the ambient temperature exceeds 110° F, such as direct exposure to any incandescent light within 4″ to 6″, extremely hot air ducts and vents, or hot water pipes. TEXTONE Plain Panels will perform satisfactorily at somewhat higher temperatures (140°) and are recommended for questionable locations.

TEXTONE is designed for use under normal moisture conditions. Installation during the phases of construction when extremely high humidity conditions might prevail should be avoided. TEXTONE Acoustical Panels are not recommended for use in the AIRSON system.

SOUND ABSORPTION

MOUNTING	Coefficients at Cycles Shown						NRC Spec. Range	Wt. psf
	125	250	500	1000	2000	4000		
No. 7	.89	.85	.62	.54	.44	.34	.55-.65	1.35

Source: An official AMA acoustical testing laboratory.



BARK TEXTURE

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*T. M. Reg. U. S. Pat. Off.

ACOUSTONE*
MINERAL ACOUSTICAL TILE

1. MECHANICAL SUSPENSION

A. Concealed Z-Spline

System Attachment Methods:

1. Direct to wood furring (see detail in adjacent column)
2. To 1½″ carrying channel grillage (see detail opposite page)
3. Direct to bar joist (see detail opposite page)

DESCRIPTION

1. **Z-Splines Attached to Wood Furring Strips**—This method is particularly adaptable to existing ceilings where the surface is in such condition that it is impractical to attach Acoustone tile by cementing.

   This system is installed by nailing wood furring strips, maximum spacing of 4′-0″ on centers, and attaching Z-Splines to the furring strips with the No. 90 Clip. The No. 90 Clip may also be used to attach Z-Splines directly to existing wood joists or to wood furring strips nailed to exposed concrete surfaces.

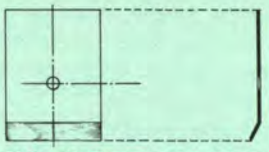
2. **Z-Splines Attached to 1½″ Carrying Channel Grillage**—This method offers an economical, simple, rigid construction and permits the use of flush joints where lighting conditions are not too severe.

   This suspension method provides metal spline supports in kerfs along the four edges of each unit. Splines also act as a continuous seal to minimize air travel through the joints. Self leveling of the tile joints is assured since intersecting corners of four adjacent units are supported on the same member.

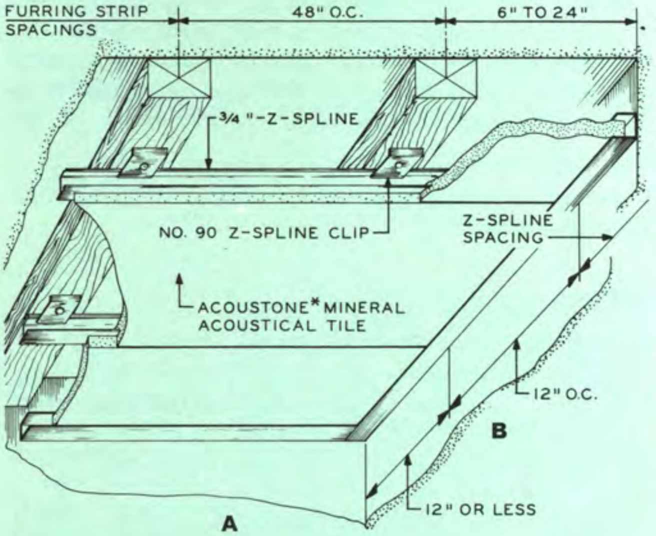
3. **Z-Splines Direct to Bar Joist**—This method may be employed when bar joists are spaced a maximum of 5 feet on center. The Z-Splines are attached direct to the bottom chord of the bar joist with the No. 87 clip. The saving gained by eliminating the 1½″ channel is often lost in "shimming" since bar joists seldom form a true ceiling plane. It is therefore suggested this method only be used where head room is critical.

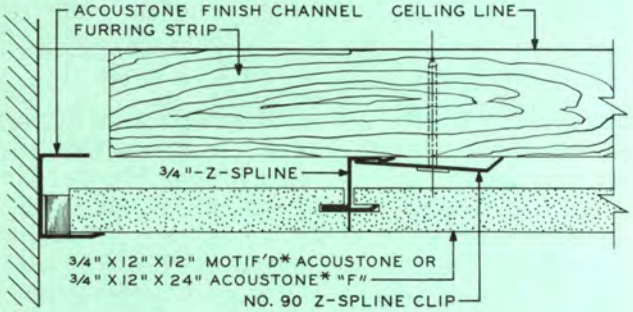
CONCEALED Z-SPLINES—Mounting No. 7

WOOD FURRING DIRECT ATTACHMENT OF Z-SPLINES

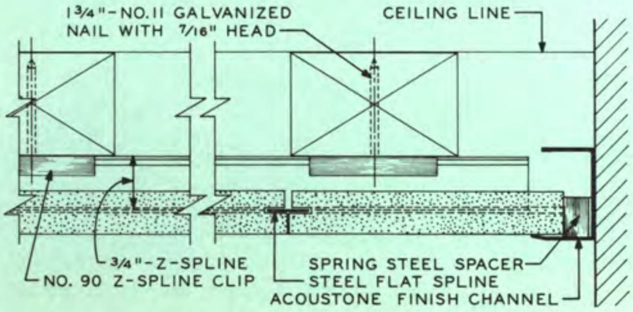


NO. 90 Z-SPLINE CLIP





DETAIL AT WALL—A



DETAIL AT WALL—B

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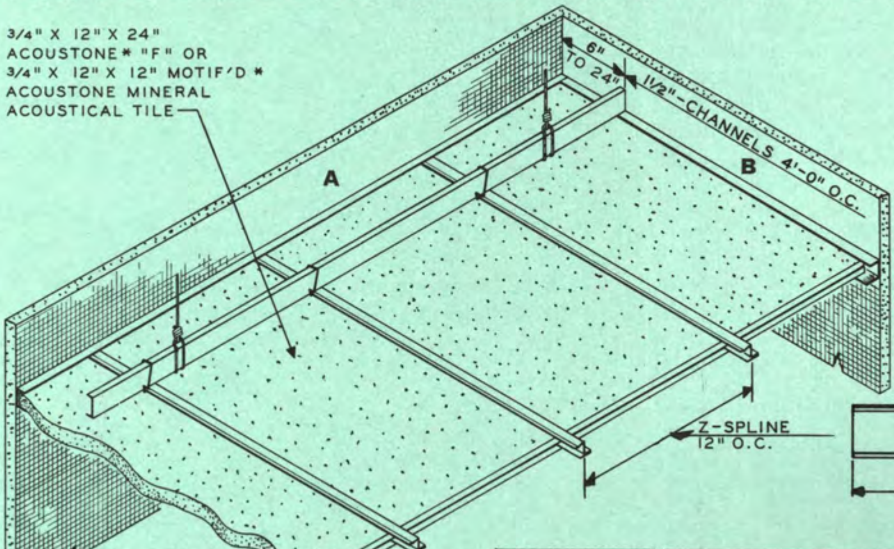
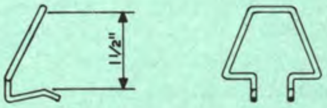
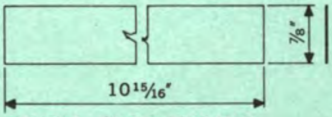
*T.M. Reg. U.S. Pat. Off.

METAL SUSPENSION
CONCEALED Z-SPLINE ATTACHMENT OF 1½″ CARRYING CHANNELS

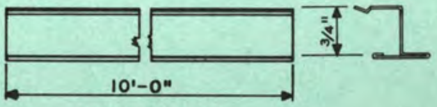




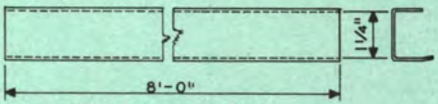
NO. 82A CLIP



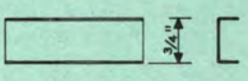
METAL FLAT SPLINE



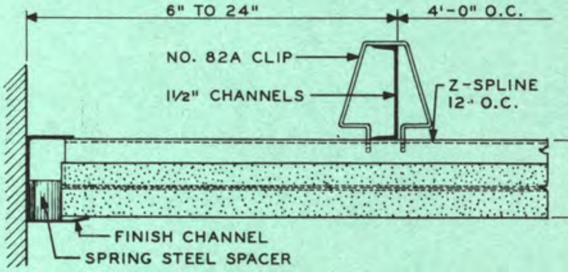
¾″ Z-SPLINE



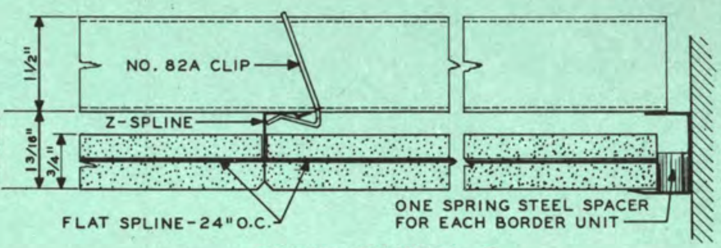
FINISH CHANNEL



¾″ Z-SPLINE SPLICE

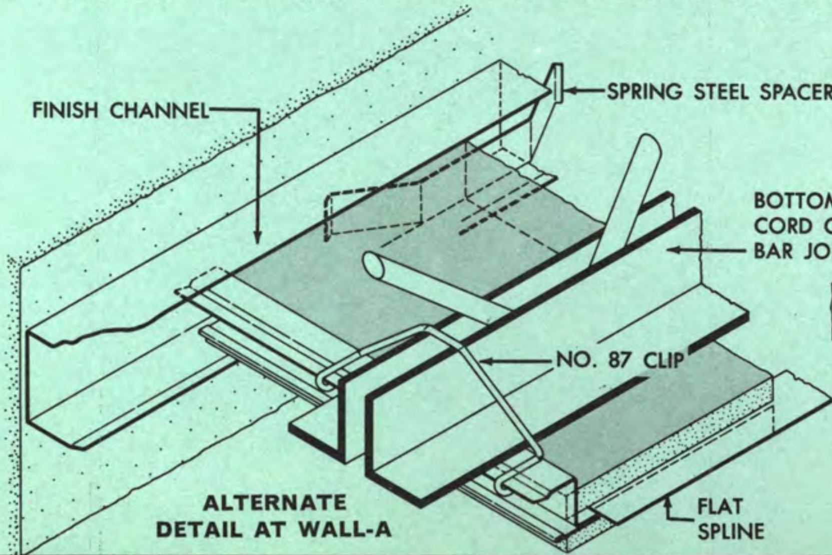


DETAIL AT WALL—A

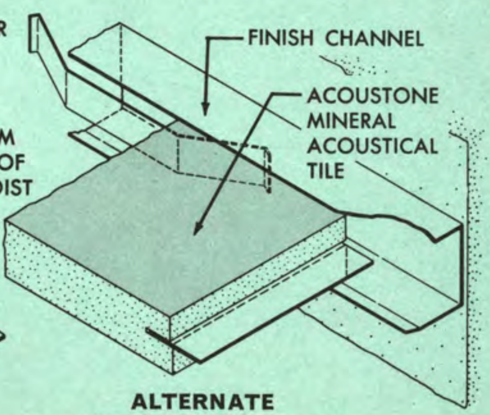


DETAIL AT WALL—B

CONCEALED Z-SPLINES ATTACHED DIRECTLY TO BAR JOIST



ALTERNATE
DETAIL AT WALL-A



ALTERNATE
DETAIL AT WALL-B

*T. M. Reg. U. S. Pat. Off.

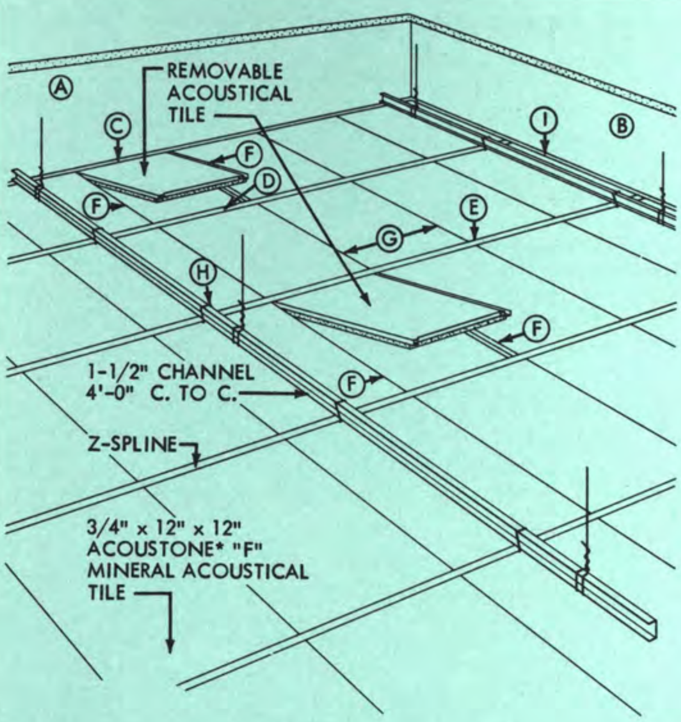
ACOUSTONE*
MINERAL ACOUSTICAL TILE

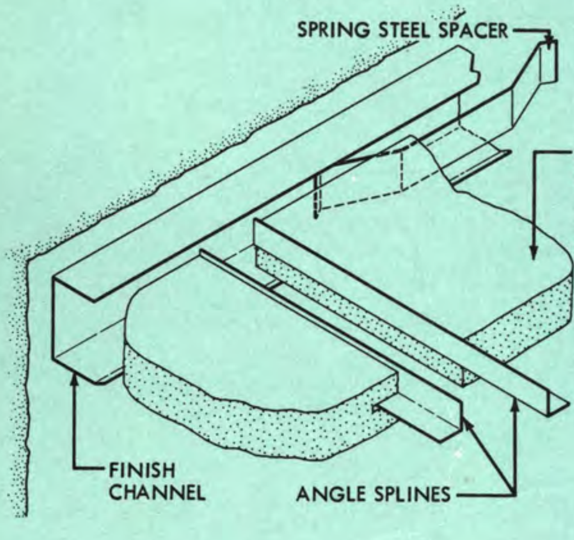
1. MECHANICAL SUSPENSION

B. Concealed Accessible Z-Spline System

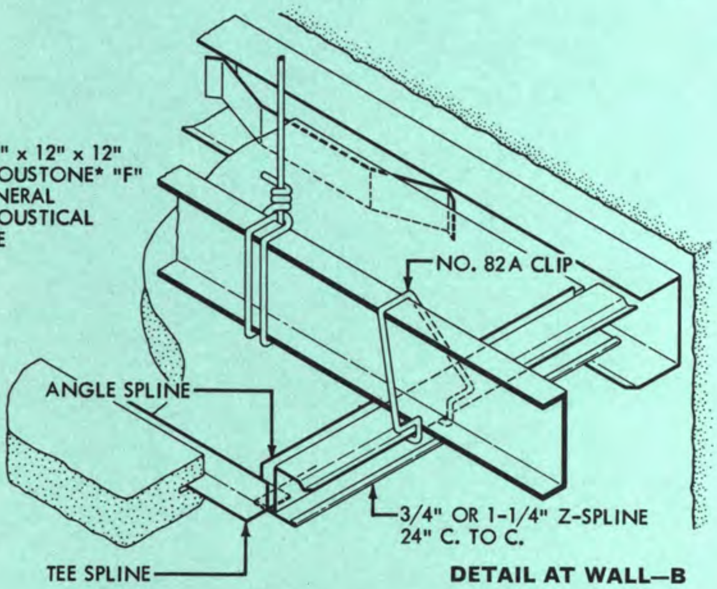
The concealed accessible system is a modified Z-spline method designed to provide complete (or partial, where desired) accessibility to the plenum area above the ceiling. Modern architectural demands requiring use of the plenum for piping, electrical equipment, sheet-metal work, and other mechanical devices have made accessibility a much desired feature of the acoustical ceiling.

This system completely conceals the fact that tile are removable for access. The finished ceiling appearance is that of an ACOUSTONE "F" mineral tile ceiling with beveled edges. Due to the special characteristics of the system only bevel edge tile is recommended. It is further suggested that ¾″, 12″ x 24″ tile be used, although the system can accommodate ¾″, 12″ x 12″ tile as well.

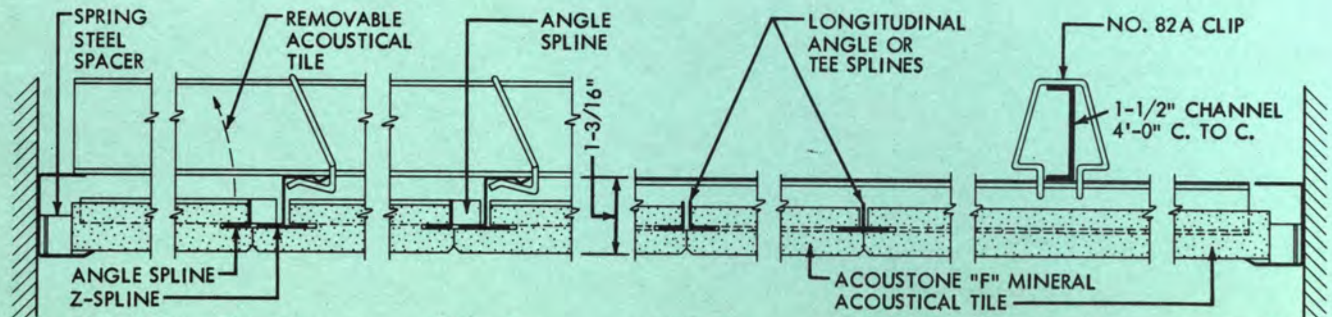

Ⓐ
REMOVABLE ACOUSTICAL TILE
Ⓒ
Ⓕ
Ⓓ
Ⓘ
Ⓑ
Ⓕ
Ⓔ
Ⓖ
Ⓗ
Ⓕ
1-1/2" CHANNEL 4'-0" C. TO C.
Ⓕ
Z-SPLINE
3/4" x 12" x 12" ACOUSTONE* "F" MINERAL ACOUSTICAL TILE



DETAIL AT WALL—A



DETAIL AT WALL—B


SPRING STEEL SPACER
REMOVABLE ACOUSTICAL TILE
ANGLE SPLINE
1-3/16"
LONGITUDINAL ANGLE OR TEE SPLINES
NO. 82A CLIP
1-1/2" CHANNEL 4'-0" C. TO C.
ANGLE SPLINE
Z-SPLINE
ACOUSTONE "F" MINERAL ACOUSTICAL TILE
DET.—C
DET.—D
DET.—E
DET.—F
DET.—G
DET.—H
DET.—I

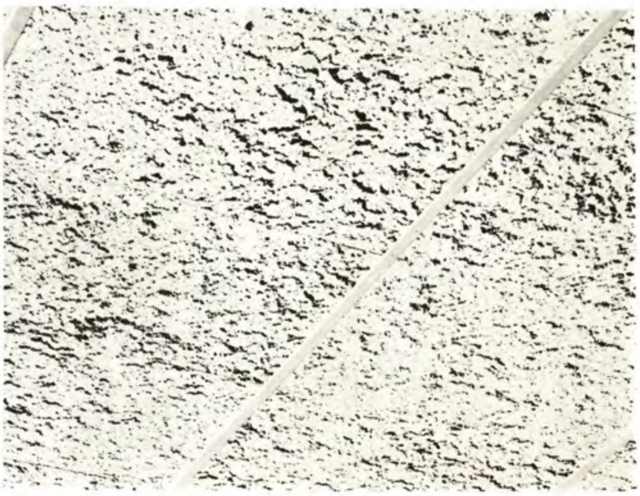
*T.M. Reg. U.S. Pat. Off.

1. MECHANICAL SUSPENSION

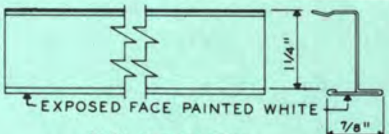
C. "E-Z-S" Z-Spline Metal Suspension System

E-Z-S Suspension System. This method is used where access is required to the area above the ceiling for adjusting valves, electrical equipment, controls of air conditioning equipment, or for other reasons.

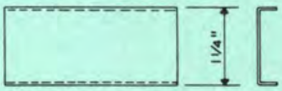
Because of its ease of installation, this method is economical and provides a low cost acoustical ceiling with complete accessibility to the area above the ceiling. Any type lighting arrangement is easily adaptable to the E-Z-S Suspension System. Lighting troffers can be installed easily and economically. Full advantage can be taken of the economy of gravity-held diffusers laid directly in the Z-Spline to replace equivalent area of Acoustone* tile. This permits maximum flexibility of lighting arrangement. See details in adjacent columns.



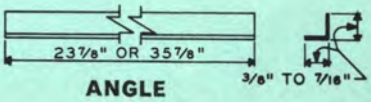
"E-Z-S" SUSPENSION SYSTEM—Mounting No. 7



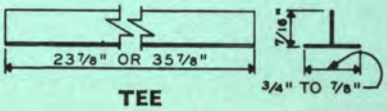
1¼" Z-SPLINE



1¼" Z-SPLINE SPLICE

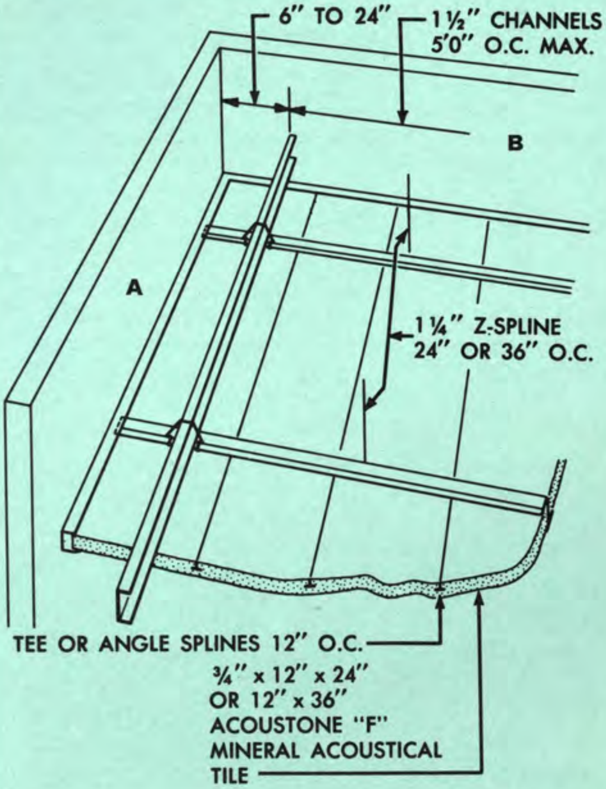


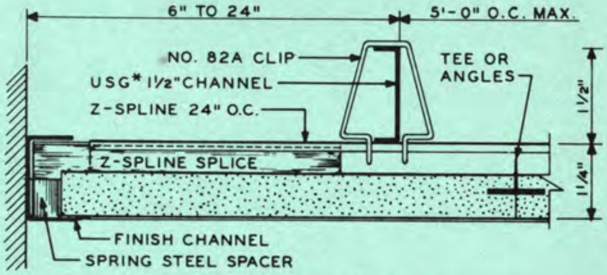
ANGLE



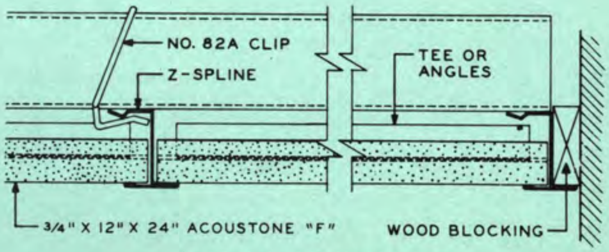
TEE

METAL SUSPENSION "E-Z-S" SUSPENSION SYSTEM


6" TO 24"
1½" CHANNELS 5'0" O.C. MAX.
B
A
1¼" Z-SPLINE 24" OR 36" O.C.
TEE OR ANGLE SPLINES 12" O.C.
¾" x 12" x 24" OR 12" x 36" ACOUSTONE "F" MINERAL ACOUSTICAL TILE



DETAIL AT WALL-A



DETAIL AT WALL-B

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*T. M. Reg. U. S. Pat. Off.

ACOUSTONE*
MINERAL ACOUSTICAL TILE

ACOUSTONE "90" TILE
1 & 1½-HOUR

Acoustone "90" suspended on the USG Concealed Z-Spline System provides a 1-hour (Design No. 15) rating for wood joist and floor construction. See details in the adjacent column.

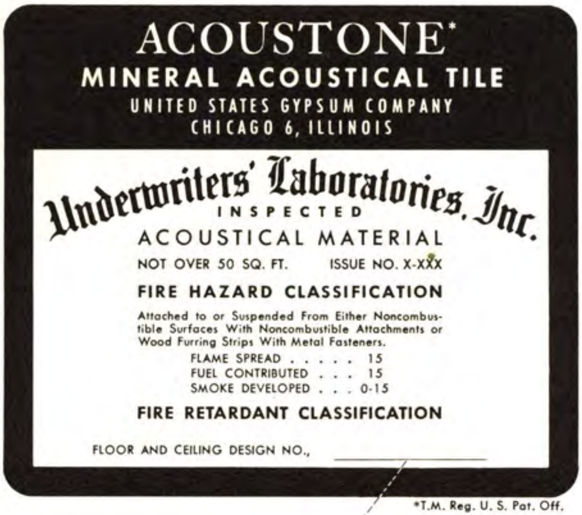
Acoustone "90" suspended on the USG Concealed Z-Spline System provides a 1½-hour (Design No. 6) rating for bar joist and concrete floor (or roof) construction. See details on the opposite page.

ACOUSTONE "120" TILE
2-HOUR

Acoustone "120" suspended on the USG Concealed Z-Spline System provides a 2-hour (Design No. 41) rating for bar joist and concrete floor (or roof) construction. See details on the opposite page.

GENERAL TEST DATA

Fire Rating—The Acoustone "90" and Acoustone "120" fire ratings are based on the standards for Fire Tests of Building Construction and Materials Fire Endurance Test ASTM E-119, conducted by Underwriters' Laboratories, Inc.



ACOUSTONE*
MINERAL ACOUSTICAL TILE
UNITED STATES GYPSUM COMPANY
CHICAGO 6, ILLINOIS

Underwriters' Laboratories, Inc.
INSPECTED
ACOUSTICAL MATERIAL
NOT OVER 50 SQ. FT. ISSUE NO. X-XXX

FIRE HAZARD CLASSIFICATION

Attached to or Suspended From Either Noncombustible Surfaces With Noncombustible Attachments or Wood Furring Strips With Metal Fasteners.

FLAME SPREAD 15
FUEL CONTRIBUTED . . . 15
SMOKE DEVELOPED . . . 0-15

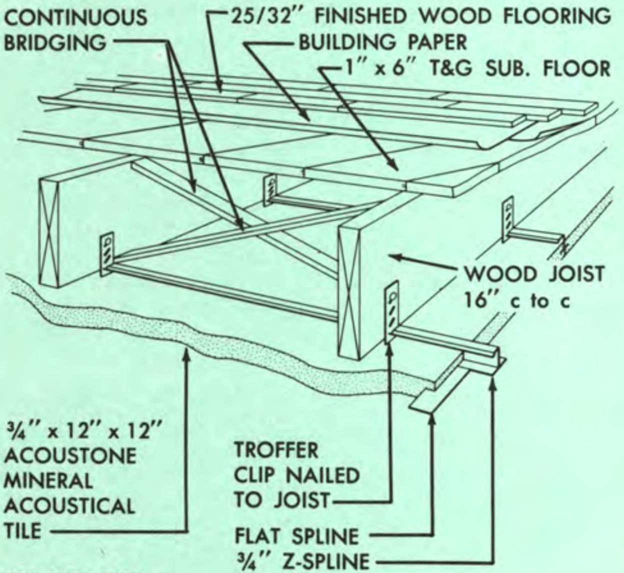
FIRE RETARDANT CLASSIFICATION

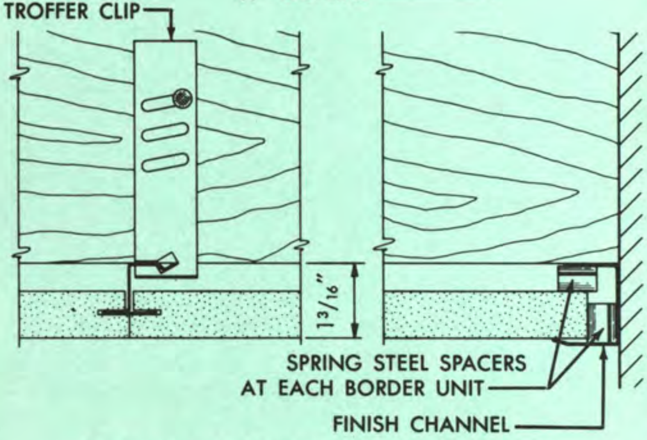
FLOOR AND CEILING DESIGN NO., ____________

*T.M. Reg. U. S. Pat. Off.

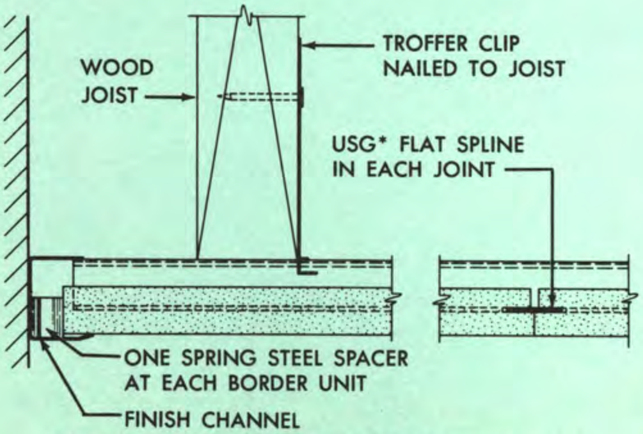
PRODUCT	Test No.	Design No.	CONSTRUCTION
ACOUSTONE "90"	4351-3	15	Wood joist and wood floor
ACOUSTONE "90"	4351-1	6	Steel bar joist and concrete floor
ACOUSTONE "120"	4351-4	41	Steel bar joist and concrete floor

FIRE RATED WOOD FRAME CONSTRUCTION


CONTINUOUS BRIDGING
25/32" FINISHED WOOD FLOORING
BUILDING PAPER
1" x 6" T&G SUB. FLOOR
WOOD JOIST 16" c to c
¾" x 12" x 12" ACOUSTONE MINERAL ACOUSTICAL TILE
TROFFER CLIP NAILED TO JOIST
FLAT SPLINE
¾" Z-SPLINE



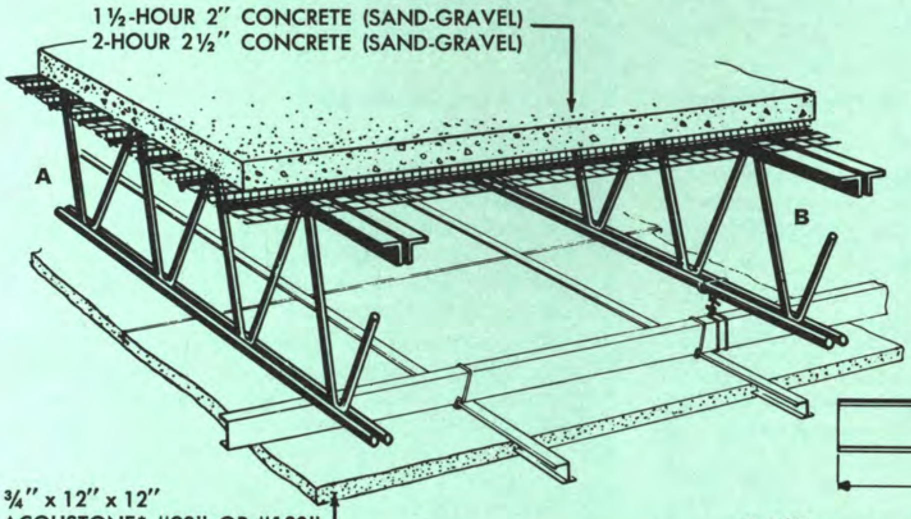
CROSS SECTION PARALLEL TO JOIST

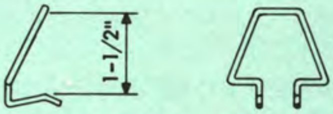

WOOD JOIST
TROFFER CLIP NAILED TO JOIST
USG* FLAT SPLINE IN EACH JOINT
ONE SPRING STEEL SPACER AT EACH BORDER UNIT
FINISH CHANNEL

CROSS SECTION TRANSVERSE TO JOIST

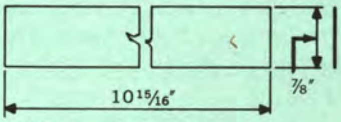
*T. M. Reg. U. S. Pat. Off.

FIRE RATED—STEEL AND CONCRETE CONSTRUCTION

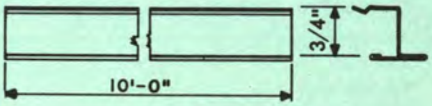

1½-HOUR 2" CONCRETE (SAND-GRAVEL)
2-HOUR 2½" CONCRETE (SAND-GRAVEL)
A
B
¾" x 12" x 12" ACOUSTONE* "90" OR "120" MINERAL ACOUSTICAL TILE



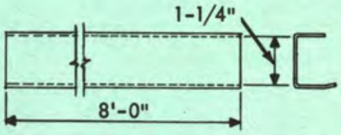
USG NO. 82A CLIP



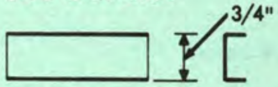
METAL FLAT SPLINE



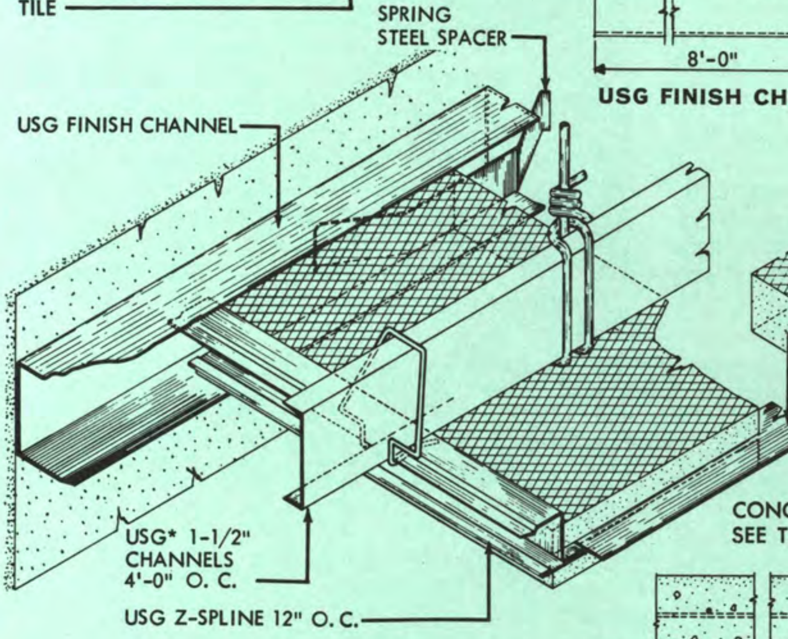
¾" USG Z-SPLINE



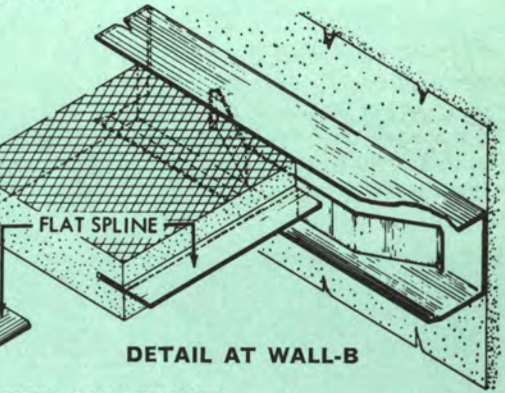
USG FINISH CHANNEL



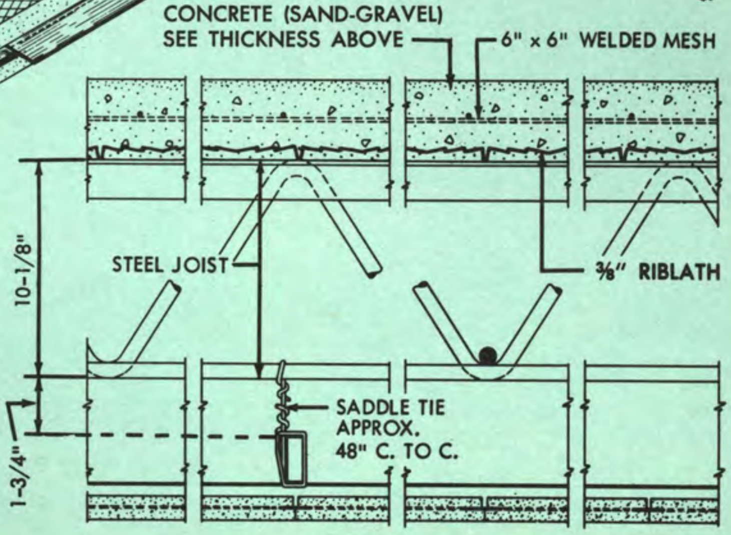
¾" Z-SPLINE SPLICE

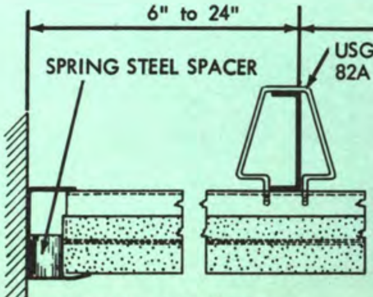


DETAIL AT WALL-A

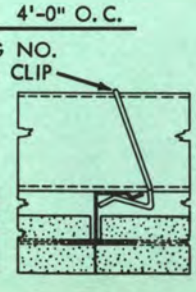


DETAIL AT WALL-B


CONCRETE (SAND-GRAVEL) SEE THICKNESS ABOVE
6" x 6" WELDED MESH
10-1/8"
STEEL JOIST
⅜" RIBLATH
SADDLE TIE APPROX. 48" C. TO C.
1-3/4"



DETAIL AT WALL-A



CLIP DETAIL

CROSS SECTION THRU PLENUM

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*T. M. Reg. U. S. Pat. Off.

2. ADHESIVE APPLICATION

Application with adhesive is a widely used method and is recommended where a suitable base exists.

BASES FOR ADHESIVE APPLICATION

A. ACOUSTONE Cemented to Gypsum Boards

Where an incombustible base is required, MOTIF'D* ACOUSTONE and ACOUSTONE can be adhesively applied to several gypsum board bases. They may be installed by the following methods:

1. Z-Board BAXBORD* Backing Board SHEETROCK* Gypsum Wallboard SHEETROCK FIRECODE* Wallboard BAXBORD FIRECODE ROCKLATH* Plaster Base	Nailed to Wood Members
2. Z-Board BAXBORD SHEETROCK FIRECODE BAXBORD FIRECODE	Attached by Screws or Nails to Metal Channels

B. Plaster

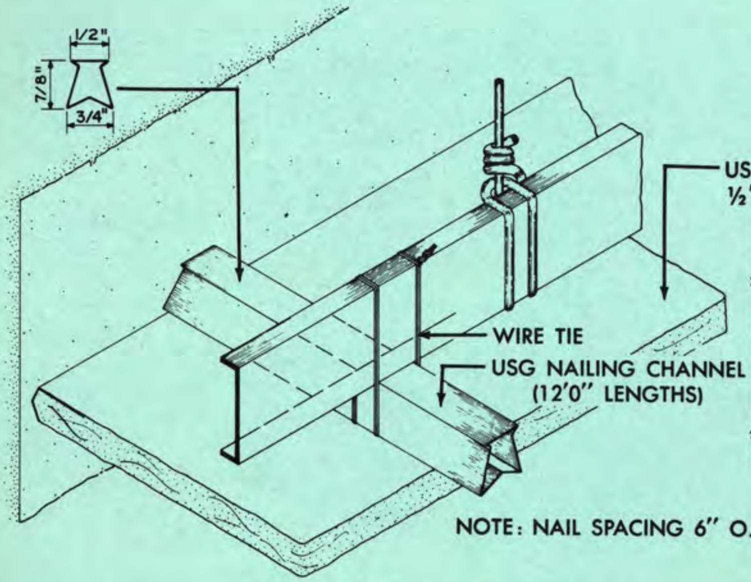
On *new work:* a full thickness of rodded brown coat of gypsum plaster in a clean, dry, level state provides an excellent base.

On *existing work:*

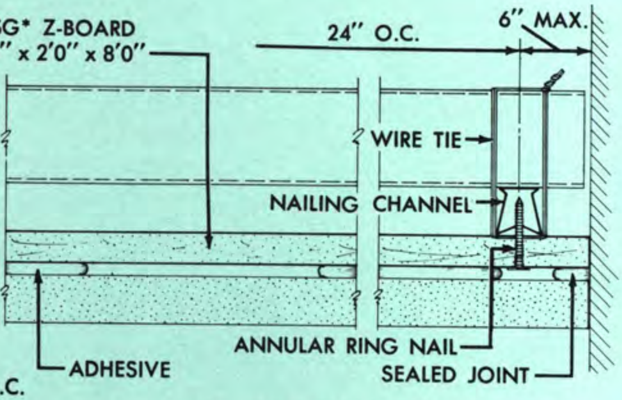
1. *Old lime putty finish* that has been in place for a year or more offers a good base if the finish is well bonded to the base coat of plaster. If it is not well bonded, consider the application of Z-Splines attached to wood furring strips with No. 90 Clips. (Note mechanical suspension systems and details on page 9.)
2. A good quality paint well bonded to sound plaster and in place not less than 6 months will usually give excellent results.

LIMITATIONS OF USE

1. *Size of Units.*
   Tile should not exceed 12″ x 12″ for ceilings or 12″ x 24″ for walls.
2. *New lime putty* finish may have free lime on the surface which can cause saponification of oils and resins in the adhesive. For this finish a combination of adhesive and nailing is recommended.
3. Hard oil (sometimes called gloss oil) when used as a size for calcimine may react with the solvents of the adhesive and therefore is an unsatisfactory base. In this case, a combination of nailing and adhesives must be used. The acoustical contractor can determine by job testing when to augment the adhesive with nailing.
4. The use of ROCKLATH* without plaster is not recommended where job conditions, particularly moisture conditions, are unsuitable. Accordingly, ACOUSTONE, mineral acoustical tile, shall be applied to such a base only when the installation of the base is made under the supervision of and to the satisfaction of the USG acoustical contractor.
5. Unless it is possible to determine the moisture condition of a concrete surface, the adhesive application of any acoustical tile to a concrete slab is not recommended. (For a more economical and secure method of attaching ACOUSTONE to concrete slabs, consider the method under B-1 above.)
6. The adhesive application of ACOUSTONE directly to wood strips or plywood is not recommended.


1/2"
7/8"
3/4"
USG* Z-BOARD ½" x 2'0" x 8'0"
WIRE TIE
USG NAILING CHANNEL (12'0" LENGTHS)
NOTE: NAIL SPACING 6" O.C.

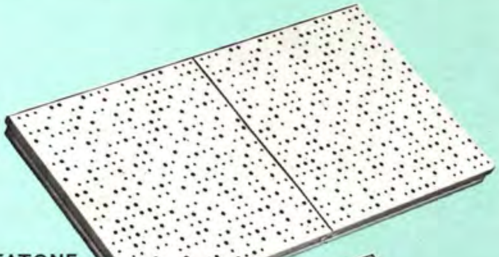
ISOMETRIC

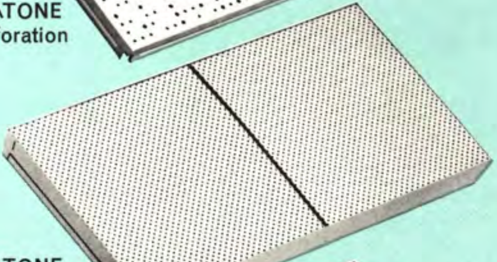


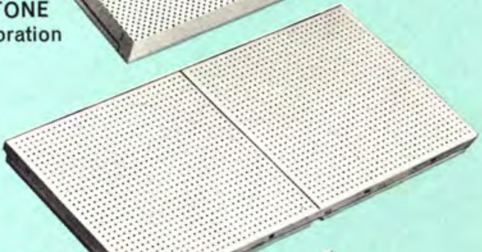
SECTION AT WALL

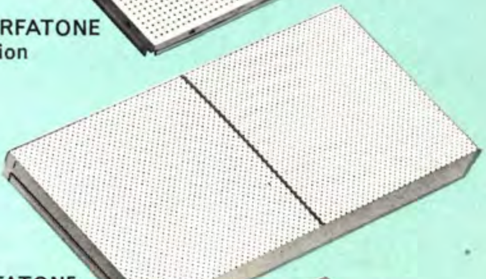
*T. M. Reg. U. S. Pat. Off.

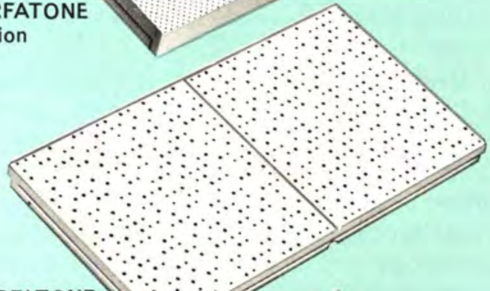
PERFATONE*
ACOUSTICAL TILE UNITS

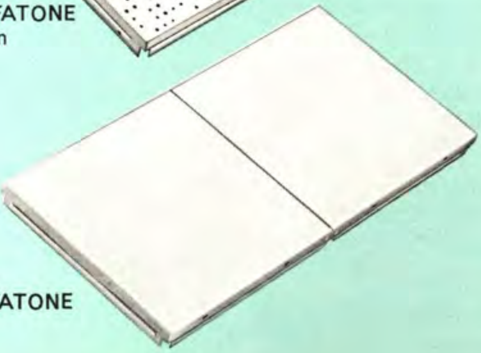

Rated PERFATONE
Random Perforation


Rated PERFATONE
Diagonal Perforation


Conventional PERFATONE
Regular Perforation


Conventional PERFATONE
Diagonal Perforation


Conventional PERFATONE
Random Perforation


Conventional PERFATONE
Unperforated

DESCRIPTION

PERFATONE Acoustical Units are perforated metal pans, 12″ x 12″, 12″ x 24″, or 12″ x 36″ in size, scored to simulate 12″ x 12″ units. Enclosed within the metal units are mineral fiber sound-absorbent pads, supported on formed wire mesh which provides an air space between the pad and the metal facing.

PERFATONE units are available with varying paint coatings on cold-rolled or electro-zinc coated steel, and in aluminum.

The PERFATONE units are also available unperforated for use as border tile or decorative effects.

For fire-rated PERFATONE assembly, see UL Design 49—3 hours.

LIMITATIONS OF USE

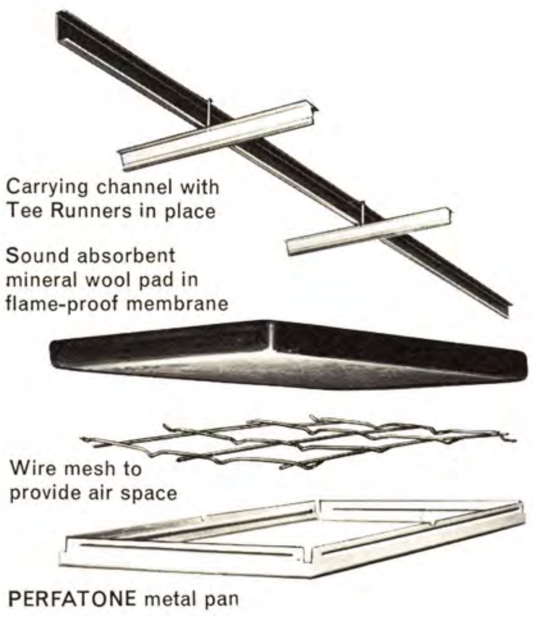
In areas of high humidity or where moisture might impinge against the acoustical surface, Aluminum PERFATONE Acoustical Units with galvanized fittings, or a different architectural design should be considered.

SOUND ABSORPTION

Material	Mounting	Coefficients at Cycles Shown						Spec. Range
		125	250	500	1000	2000	4000	
CONVENTIONAL	7	.90	.77	.86	.99	.75	.60	.80-.90
FIRE RATED	7	.66	.72	.96	.99	.83	.67	.85-.95

Test Source: Acoustical Materials Association
Pads were tested in perforated enameled metal units with pad supports.
LIGHT REFLECTION—White 70%
FIRE RESISTANCE—"INCOMBUSTIBLE" as Tested by Official A.M.A. Laboratory

PERFATONE Assembly Unit



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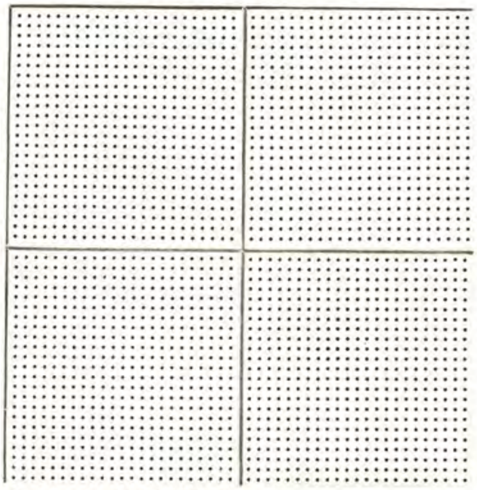
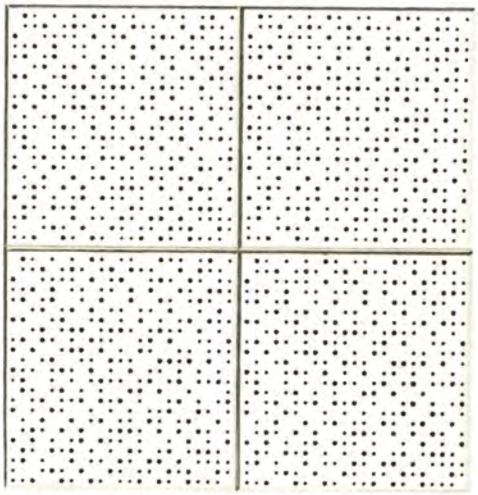
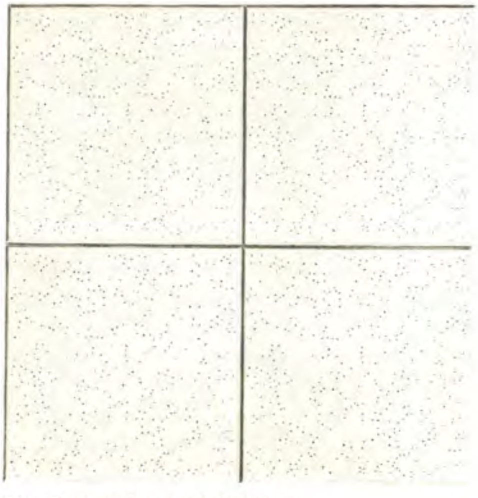
*T. M. Reg. U. S. Pat. Off.

AUDITONE*
WOOD FIBER ACOUSTICAL TILE


Perforated **AUDITONE**


Random Perforated **AUDITONE**


Pin Perforated **AUDITONE**

DESCRIPTION

AUDITONE Wood Fiber Acoustical Tiles are light in weight, low in cost, and designed to give maximum acoustical efficiency. Each unit is finish-painted white at the factory and is available accurately formed with butt bevel or tongue and groove edges. AUDITONE Wood Fiber Acoustical Tile is made in three styles, Perforated, Random Perforated, or Pin Perforated.

Sizes—AUDITONE Wood Fiber Acoustical tile is available in ½″ or ¾″ thicknesses with the exception of Slotted AUDITONE which is available in ¾″ thickness only. All styles are produced in 12″ x 12″ butt bevel or 12″ x 24″ tongue and groove tiles. 12″ x 24″ tiles are center scored to represent 12″ x 12″ units.

Perforated AUDITONE—Wood Fiber Acoustical Tile has 529 holes, 3/16″ in diameter, cleanly drilled into each square foot of tile.

Random Perforated AUDITONE—Wood Fiber Acoustical Tile has 135 holes ¼″ in diameter, and 188 holes 3/16″ in diameter cleanly drilled into each square foot of tile.

Pin Perforated AUDITONE—Wood Fiber Acoustical Tile has over 1,000 pin perforations in each square foot of tile.

Edge Treatment—All types of AUDITONE are made with butt bevel edges for cementing to proper bases without supplementary nailing. They are also made with tongue and groove edges designed to better utilize the economical methods available for stapling, screwing, or nailing wood fiber tile directly to wood joists, studs, or nailing strips. The tongue and groove edges assure level joints and smooth ceiling appearance.

FUNCTION AND UTILITY

Sound Absorption depends upon the thickness of the tile and the type of mounting. See technical data on the opposite pages for sound absorption values.

Paint and Color—All AUDITONE is finish-painted white at the factory.

Maintenance—AUDITONE can be repeatedly brush or spray painted following recommended paint procedures with oil, resin emulsion casein, or any of the commercial types of paint without appreciable loss of sound absorption at 500 cycles per second or in the Noise Reduction Coefficient. AUDITONE wood fiber acoustical tile can be cleaned with putty or paste type wallpaper cleaners.

Resistance to Soiling and Breathing—The smooth, painted finish of AUDITONE Wood Fiber Acoustical tile resists soiling. AUDITONE with tongue and groove edges minimizes objectionable air travel through the joints when used on suspended nailing strips.

Thermal Conductivity—AUDITONE has a k factor of 0.38.

Fire Resistance—(1) Pin Perforated, Perforated, and Random Perforated AUDITONE, when painted with a standard USG mill finish, are rated "Class D" by Federal Specification SS-A-118b and Interim Federal Specification SS-A-00118c.

(2) Pin Perforated, Perforated, and Random Perforated AUDITONE, when mill-finished with USG flame-resistant paint, are rated "Class C" by Federal Specification SS-A-118b, and Interim Federal Specification SS-A-00118c.

Perforated—AUDITONE wood fiber tile has a light reflection of 75% as tested by AMA Laboratories.

Random Perforated AUDITONE has a light reflection of 77% as tested by AMA Laboratories.

Pin Perforated AUDITONE tile has a light reflection of 82% as tested by AMA Laboratories.

*T. M. Reg. U. S. Pat. Off.

SOUND ABSORPTION COEFFICIENTS

Test Source: Acoustical Materials Association

THICKNESS	MOUNTING	COEFFICIENTS AT CYCLES SHOWN						NRC SPEC. RANGE	WEIGHT PSF
		125	250	500	1000	2000	4000		
PERFORATED AUDITONE* TILE									
½"	1	.14	.23	.66	.68	.78	.76	.55–.65	.83
	2	.18	.61	.51	.62	.78	.74	.60–.70	.83
¾"	1	.24	.42	.64	.69	.81	.79	.60–.70	.99
	2	.23	.62	.56	.72	.83	.85	.65–.75	.99
	7	.36	.35	.62	.88	.83	.74	.60–.70	.96
RANDOM PERFORATED AUDITONE TILE									
½"	1	.25	.28	.62	.58	.66	.68	.50–.60	.87
	2	.15	.67	.46	.52	.66	.71	.55–.65	.87
¾"	1	.19	.38	.68	.67	.78	.73	.60–.70	.98
	2	.25	.65	.51	.73	.76	.78	.60–.70	.98
	7	.48	.43	.57	.76	.81	.69	.60–.70	1.00
PIN PERFORATED AUDITONE TILE									
½"	1	.14	.25	.68	.73	.55	.35	.50–.60	.77
	2	.17	.50	.63	.58	.56	.34	.50–.60	.77
¾"	1	.17	.38	.78	.71	.55	.46	.55–.65	.92
	2	.15	.65	.66	.65	.51	.40	.55–.65	.88
	7	.31	.40	.64	.72	.57	.62	.55–.65	.92

PRODUCT	Attenuation (Decibels) Coefficients At cps										
	125	177	250	354	500	707	1000	1414	2000	2828	4000
¾" Random Perforated AUDITONE	26	38	33	35	43	46	50	55	55	62	49

SOURCE: AMA ceiling sound transmission test—two room method. Mounting No. 7
11 Frequency Average = 44.7 db; Sound Trans. Class = 41

INSTALLATION METHODS

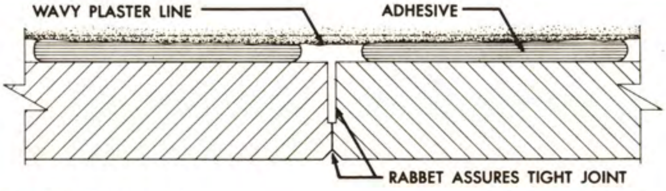
AUDITONE is installed by approved USG Acoustical Contractors using one of the following methods:

1. Adhesive application of 12"x12" or 12"x24" AUDITONE to an existing ceiling or to a suspended gypsum board base.
2. Stapling, nailing or screwing 12"x24" tongue and groove units to wood strips, studs or joists.
3. Screw application of 12"x24" tongue and groove units to USG Z-Board, SHEETROCK* FIRECODE* Wallboard or SHEETROCK Wallboard.
4. Mechanical suspension of ¾" x 12" x 24" tongue and groove units.

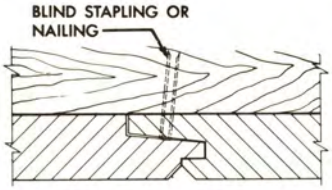
LIMITATION OF USE

Perforated, Random Perforated and Pin Perforated AUDITONE should not be used below wainscot height or where tile will be subject to severe impact, abrasion, or tampering.

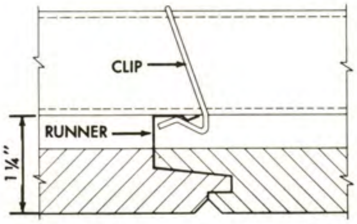
AUDITONE tile is not recommended for use where it will be exposed to steam or constant high humidity.



No. 1 MOUNTING ---------------- ADHESIVE APPLICATION OF 12" x 12" AUDITONE



No. 2 MOUNTING ------------- STAPLE OR NAIL APPLICATION TO WOOD STRIPS USING 12" x 24" T&G AUDITONE



No. 7 MOUNTING -------------- TO METAL RUNNER USING T&G AUDITONE

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*T. M. Reg. U. S. Pat. Off.

SPECIFICATIONS

I. SCOPE

(List All Areas To Receive Acoustical Treatment.)

II. GENERAL PROVISIONS

Bases to receive acoustical units and the units themselves shall not be installed unless satisfactory closures for windows and other openings are in place and roofs are tight. Temperatures in the working areas shall be well above freezing.

Bases to receive acoustical units shall be sound, dry, and free of moisture.

The area or room in which acoustical units are to be installed shall not be damp; i.e. plastic, terrazzo floor, etc. shall be previously installed and dry.

Since methods and conditions of application and use are beyond our control, the United States Gypsum Company will not be responsible for failure of its products when not used according to directions and specifications.

III. MATERIALS

Acoustical Tile By The United States Gypsum Co. Shall Be:

ACOUSTONE "F"—(White or Ivory)
- ¾″ x 12″ x 12″ (square or bevel edge)
- ¾″ x 12″ x 24″ (square edge or bevel edge centerscored)
- ¾″ x 12″ x 24″ (bevel edge centerscored for Concealed Accessible System)
- ¾″ x 12″ x 36″ (square edge)

ACOUSTONE "db"
See ACOUSTONE "F" sizes.

ACOUSTONE "90" and "120"
- ¾″ x 12″ x 12″ (square edge)

MOTIF'D* ACOUSTONE—(White or Ivory)
- ¾″ x 12″ x 12″ Pattern no. (2, 5, 10, 19, 33, 36, or 40)

ACOUSTONE Finesse
See ACOUSTONE "F" sizes

ACOUSTONE Glacier
- ¾″ x 12″ x 12″ (square edge)
- ¾″ x 12″ x 24″ (square edge)

RANDOM PERFORATED AUDITONE, PIN PERFORATED AUDITONE, or REGULAR PERFORATED AUDITONE
- ½″ x 12″ x 12″ (butt bevel)
- ½″ x 12″ x 24″ (tongue and groove)
- ¾″ x 12″ x 12″ (butt bevel)
- ¾″ x 12″ x 24″ (tongue and groove)

PERFATONE, Fire-Rated and Conventional
12″ x 12″, 24″, 36″, or 48 (butt bevel and scored) perforated metal (steel or aluminum) unit with flame proof sound absorbent paper wrapped pad and grid support.

Base for Application Shall Be:

1½″ *cold rolled carrying channel* grillage supported by No. 10 gage hanger wire.

Gypsum board—Nailing channel using
Nailing channel and splice plate.

Tie wire 17 gage galvanized

Nails, 12½ to 11 gage, with ring shank 16 to 20 rings per inch, medium or short diamond point, ¼″ to 5⁄16″ head. Nails shall be 1¼″ long.

a. ½″ x 2′ x 8′ USG Z-Board
b. ½″ SHEETROCK* FIRECODE* Wallboard
c. ½″ or ⅝″ BAXBORD* backing board
d. ⅝″ BAXBORD FIRECODE

Butt Joint clip or Butt Joint washer

Wood Grillage
2″ x 2″ or 2″ x 3″ wood nailing strips—straight grain, kiln dried and free from knots.

1″ x 3″ wood furring strips—straight grain, kiln dried and free from knots.

Systems For Application Shall Be:

USG Concealed Z-Spline for ACOUSTONE and MOTIF'D ACOUSTONE of 12″ x 12″ and 12″ x 24″ sizes.
- ¾″ USG Z-Spline
- Flat Spline of galvanized steel.
- Spring steel spacer.
- USG finish channel and finish channel corner plate.
- 82-A clips—to attach Z-Spline to 1½″ (C.R.) carrying channel.
- 85 clip—to attach Z-Spline direct to bar joist.
- 90 clip—to attach Z-Spline direct to wood furring.

Concealed Accessible Z-Spline System for ACOUSTONE
- ¾″ or 1¼″ Z-spline
- T-Spline of galvanized steel
- Angle Splines—23½″ and 10 15⁄16″ of galvanized steel
- Finish channel and finish channel cover plate
- 82-A clips to attach Z-Splines to 1½″ carrying channels

E-Z-S Suspension System—For ACOUSTONE; and MOTIF'D ACOUSTONE of 12″ x 24″, 12″ x 36″, and 24″ x 24″ nominal sizes.
- 1¼″ Z-Spline painted white.
- T-Spline of galvanized steel.
- Angle spline of galvanized steel.
- Spring steel spacer.
- USG finish channel and finish channel corner plate.
- 82-A clip—to attach Z-Spline to 1½″ (C.R.) carrying channel
- 85 clip—to attach Z-Spline direct to bar joist
- 90 clip—to attach Z-Spline direct to wood furring

PERFATONE Suspension System
- T-Runners and splices
- Finish channel
- Wire clip—for attachment to 1½″ (C.R.) carrying channel

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*T.M. Reg. U.S. Pat. Off.

Mechanical Suspension of—T&G AUDITONE*

1. T&G Runners, closed type, shall be attached on 12″ centers and at right angles to:
    - a. 1½″ (C.R.) carrying channel grillage by No. 82 Clip
    - b. Bar joist by No. 85 Clip
2. T&G Runners, open type, shall be attached on 12″ centers and at right angles to:
    - a. Wood framing by No. 90 Clip

Adhesive

Shall be of a type manufactured expressly for the purpose of applying acoustical tile and shall not be water soluble. It shall not contain ingredients that react chemically with paint, or contain a solvent that has a stronger solvent action on an oil paint than naphtha.

Flat Fiber Splines (For Aligning Square Edge ACOUSTONE* and MOTIF'D* ACOUSTONE) shall be ¾″ x 3″ x .048″.

Staples, Nails and Screws

Staples for (½″ or ¾″) tongue and groove AUDITONE shall be ⁹⁄₁₆″ long, coated.

Nails for ½″ tongue and groove AUDITONE shall be 1⅛″ blue lath nails.

Nails for ¾″ tongue and groove AUDITONE shall be 1¼″ blue lath nails.

Screws for ½″ tongue and groove AUDITONE shall be ⅞″ no. 4 flat head.

Screws for ¾″ tongue and groove AUDITONE shall be 1″ no. 4 flat head.

IV. INSTALLATION

Base

1½″ cold rolled channel grillage—No. 10 gage hanger wires shall be securely attached at 4′-0″ on center. 1½″ carrying channels shall be tied to the hanger wires and shall be hung level at a maximum spacing of 4′-0″ on center. The 1½″ channel adjacent to an intersecting wall shall not be placed more than 12″ from the wall.

Gypsum Board—Nailing Channel—Nailing channel shall be securely wire tied to 1½″ cold rolled carrying channels with no. 18 gage galvanized tie wire.

Nailing Channel Maximum Spacing Shall Be:

- a. 24″ on center for ½″ Z-Board (and other ½″ and ⅝″ gypsum boards having either "V" edges or taped joints).
- b. 16″ on center for ½″ Baxbord
- c. 20″ on center for ½″ or ⅝″ Gypsum Boards not covered in "a" or "b" above.

Nail spacing shall be 6″ center to center. End joints are to be staggered at least one support spacing. Butt joints shall occur at the nailing channel where butt joint clips or washers shall be used 6″ on center.

Wood Grillage—Main Members (2″ x 2″ or 2″ x 3″) shall be suspended not more than 36″ on center. 1″ x 3″ furring strips shall be nailed in place not more than 12″ on center. (For nail, staple or screw method of applying, ¾″ x 12″ x 24″ T&G AUDITONE, the furring strips may be placed 16″ on center).

Metal Suspension

Concealed Z-Spline Method of Installing:

1. MOTIF'D ACOUSTONE
2. ACOUSTONE "F"

¾″ Z-Splines shall be attached on 12″ centers and at right angles to:

- a. Metal Grillage by 82-A clip
- b. Bar Joist by 85 clip
- c. Wood Framing by no. 90 clip

The tile shall be supported by inserting the Z-Spline flanges into the kerfed edges of the tile. Abutting edges shall be aligned by inserting flat steel splines into the kerfs of the transverse edges of the tile. ACOUSTONE finish channel moulding shall be provided at the wall intersections and spring steel spacers placed into the channel at 12″ centers. Finish channel corner plate shall be used at all exterior corners. At interior corners where channel is to continue, flanges shall be cut and the web bent to form corners, overlapping channel flanges.

ACOUSTONE F for Concealed Accessible System

- a. ¾″ or 1¼″ Z-splines shall be attached on 24″ centers and at right angles to the metal grillage by 82-A clips.
- b. Accessible Tile—USG ⁷⁄₁₆″ x ⁷⁄₁₆″ x 23½″ Angle Splines shall be inserted in the kerf on each 24 inch edge with both angles on one end extending ½″ beyond the edge to support the tile on the Z-Splines.

    The ⁷⁄₁₆″ x 10¹⁵⁄₁₆″ Angle Splines shall be inserted in the 12″ kerf which has the protruding angles. The tile is then installed by seating the opposite end of the tile in the Z-Spline and seating the protruding angles on the adjoining Z-Spline.

E-Z-S Z-Spline Metal Suspension Installation Method:

ACOUSTONE "F"

1¼″ painted Z-Spline shall be attached on 24″ centers and at right angles to:

- a. Metal Grillage by no. 82 clip
- b. Bar Joists by no. 85 clip
- c. Wood Furring or Framing by no. 90 clip

¾″ x 12″ x 24″ tile shall be placed on top of the lower flange of the Z-Spline; Angle Splines or T-Splines shall be inserted in the kerf of the abutting or transverse edges of the tile.

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*T. M. Reg. U. S. Pat. Off.

T&G Suspension System—For T&G AUDITONE

T&G Runners (closed or open type) and splices.

82-A Clip—to attach T&G Runner (closed type) to 1½″ carrying channel.

85 Clip—to attach T&G Runner (closed type) direct to bar joist.

90 Clip—to attach T&G Runner (open type) direct to wood furring.

INSTALLATION—3-Hour Fire-Rated
PERFATONE* Metal Pans

a. Attach PERFATONE finish channel molding on the wall at the proper ceiling height. Suspend main carrying beams on 4′ centers with #12 hanger wire on 4′ centers.

b. Connect main carrying beams with cross beams by slipping the end tabs into the over-and-under main beam slots and locking them in with the hardened steel tension pins. The plastic sleeve on the end tab forms a stop for the tension pin to pull against. When heat or pressure is applied, the plastic sleeve melts or shears out, leaving the end tab free to travel and take up any expansion.

c. PERFATONE acoustical units, with the mineral fiber pad and wire mesh in place, shall be securely snapped into the fire-rated cross beams.

d. All intersection joints are concealed with a symmetrical cover plate, leaving only an overlap of white on white.

e. For fire-rated assemblies using recessed lights, THERMAFIBER* light fixture protection should be placed over the recessed lights as well, to conform to Underwriters' Laboratories test conditions.

INSTALLATION Conventional **PERFATONE*** Metal Pans

a. 1½″ Carrying Channel Construction. No. 8 ga. hanger wires shall be attached at maximum of 4′0″ on center. 1½″ Carrying Channels shall be tied to hanger wires and hung level at a maximum spacing of 4′0″ on center.

b. Tee Runners shall be attached 2′0″ on centers by Tee Runner clips to the 1½″ Carrying Channels. PERFATONE units, with the mineral fiber pad and pad support included, shall be securely snapped into the Tee Runners. PERFATONE finish channel molding shall be installed at the wall surfaces.

Adhesive

a. 12″ x 12″ Acoustical units shall be primed with adhesive prior to the application of 4 spots of adhesive placed near the corners of the tile. The adhesive shall be approximately 2½″ in diameter after the tile has been pressed into position on the ceiling.

Place ¾″ x 3″ x .048″ fiber splines in the kerfs at the corners of the acoustical units (required only for square edge ACOUSTONE and MOTIF'D ACOUSTONE).

b. 12″ x 24″ T&G AUDITONE shall be primed with adhesive prior to the application of the 6 spots of adhesive. Place 4 spots of adhesive near the corners of the 12″ x 24″ units and 2 spots near the edges of the tile at the centerline of the 24″ dimension. The adhesive shall be approximately 2½″ in diameter after the tile has been pressed into position on the ceiling. The units shall be placed so that the face surface of the acoustical ceiling is aligned and level.

Staples, Nails, & Screws

12″ x 24″ T&G AUDITONE shall be installed by attaching the leading tongue edge at the ends and center with the specified staples (nails or screws):

a. To the wood furring or wood framing

b. To the Gypsum board base (screw application only)

"ACOUSTONE," "AUDITONE," "MOTIF'D," "TEXTONE," "USG," "ROCKLATH," "SHEETROCK," "FIRECODE," "BAXBORD," "PERFATONE" mentioned in this publication are registered trademarks owned by United States Gypsum and used by it to distinguish its products. **"ACOUSTONE"** as used herein identifies the particular mineral acoustical tile; **"AUDITONE"** as used herein identifies the particular wood fiber acoustical tile; **"MOTIF'D"** as used herein identifies the particular mineral acoustical tile with decorated surface; **"TEXTONE"** as used herein identifies a particular acoustical panel; **"USG"** as used herein identifies the particular sheathing and sound insulation; **"SHEETROCK"** and **"FIRECODE"** as used herein identify the particular gypsum wallboard; **"BAXBORD"** as used herein identifies the particular backing board; **"ROCKLATH"** as used herein identifies the particular gypsum lath or plaster base; **"PERFATONE"** as used herein identifies the particular perforated metal acoustical tile; all manufactured only by United States Gypsum.

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THROUGH PRESSURIZED ACOUSTICAL CEILINGS

UNITED STATES GYPSUM

UNITED STATES GYPSUM

A.I.A. File 30-F-1 30-F-2

1964

*T. M. Reg. U. S. Pat. Off.

A NOTE TO THE ARCHITECT AND MECHANICAL ENGINEER

Your primary concern in selecting the best air distribution system for your project is whether the distribution system will maintain comfort for the occupants. Comfort, in air conditioning, results from control of three elements: temperature, humidity and air motion. Together, these are called "thermo-equivalent conditions" and this is the determinant of any comfort level. Any variation from accepted standards of one of these elements may result in discomfort to the occupants.

Temperature and humidity control is easily recognized as necessary. In modern central heating and air conditioning systems, temperature and humidity are controlled by the primary equipment. In the Airson system, the fan units supply motion to the air to move it into the plenum chamber above the suspended acoustical ceiling. The pressurized plenum supplies the necessary conditioned air through the ceiling into a room at a prescribed velocity to provide acceptable air motion, eliminate air stagnation, and provide a controllable comfort level. An air distribution system must satisfy the engineering requirements as stated above, and conversely must not distract from the aesthetic features provided by the Architect.

Unfortunately, this technical piece cannot provide all the necessary information to complete the design for an air distribution system. However, this information can be easily obtained from the Airson Technical Manual. This manual has all the information required to accurately design a system and clearly illustrates and defines installation and erection requirements for proper system performance.

WHAT YOU SHOULD EXPECT IN AN AIRSON AIR DISTRIBUTION SYSTEM

Comfort—Uniform air distribution of conditioned air throughout the room, wall to wall and floor to ceiling, is provided through controlled air velocity and air penetration over the entire conditioned space. With controlled air motion within the room, environmental comfort can be accomplished. Drafts or stagnant areas are not likely to exist because the correct volume of air is delivered at a prescribed air velocity to the breathing level.

Control & Balancing—Since everyone in the field recognizes that a perfect system is improbable because of primary equipment tolerances and workmanship, any good system of air distribution must be designed to permit greater control at the point of distribution to compensate for what cannot practically be built into a basic system itself. Conventional system balancing, normally, is very difficult to obtain and maintain because of the many unpredictable variations in outside and inside circumstances affecting primary equipment and changing room conditions. However, with the Airson system having multiple controls in every active tile or grid, the opportunity is available for complete control of air motion throughout the entire room or area. A simple slide adjustment, which can be made from below without removing the tile, sets the air velocity and balances the air motion in the occupied space. Ordinary non-adjustable ceiling distribution systems would require a removal and/or rearrangement of tile, a change in plenum air flow or other major changes to accommodate unusual situations.

Appearance—The timeless beauty of Acoustone* mineral acoustical tile with its natural fissures masking the Airson orifices provides a pleasant aesthetic appointment to any architectural project. Concurrently, the downward action of air uniformly over the ceiling area directs soiled room air away from the ceiling surface, prolonging the need for any decorative maintenance. Many Airson ceilings in place for several years have never been painted or cleaned and still look like new. Most important is the fact that the elimination of grilles and diffusers from the ceiling area gives complete lighting flexibility and architectural design freedom.

Sound Absorption and Attenuation—The Airson Systems employ either Acoustone Mineral Fiber Acoustical Tile, or an approved ceiling (board) panel. Both are generally excellent sound absorbers. "Up-and-Over" sound attenuation is also good with an Airson Acoustone ceiling containing the open jets. Transmission loss is comparable to average office partition loss and, except in cases where absolute privacy is desired, this system is adequate without a sound transmission barrier above the ceiling. (See technical information for acoustical data on Acoustone Mineral Acoustical Tile.)

Versatility—The uninterrupted ceiling surfaces with ceiling-wide air distribution are ideal for quick economical allocation of partitions or room space alterations. Also, deviation from normal environmental comfort standards can be easily accommodated by the inherent controls provided within the Airson System.

Economy—The Airson System, with all its plus features, is comparable in cost to conventional air distribution and ceiling constructions. Frequently substantial savings can be made over conventional systems, particularly when extensive duct work can be eliminated.

Maintenance—Very little maintenance is required with an Airson ceiling. The uniform distribution of air keeps dirt and other airborne matter away from the ceiling extending the painting or cleaning cycle beyond that which is normally required. When the situation arises and decorative maintenance must be done, the washability and paintability of Airson Acoustone is excellent. Factory-painted Airson Acoustone tile may be washed with a damp sponge or cleaned with a vacuum cleaner, chemical rubber sponge, used dry, or putty or paste type wallpaper cleaner. Accidental spotting or soiling can usually be removed by these methods before overall redecoration is necessary. Airson Acoustone may be brush or spray painted many times without appreciable loss of sound absorption at 500 cycles per second or in the Noise Reduction Coefficient. The effect of repeated coats of paint on Acoustone and other materials may be found in Research Paper RP-1298, "Effect of Paint on Sound Absorption of Acoustical Materials," which is obtainable from the National Bureau of Standards, U.S. Department of Commerce, Washington, D.C. Another important fact, painting does not affect the original performance of Airson air delivery when done in accordance with paint manufacturers recommendations. The orifices are designed large enough so they will not support any capillary action of the paint in closing off the orifices and, in turn, restricting air flow. Oil, casein, resin emulsion or spirit thinned paints may be used with recommended painting procedures.

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The most expedient way to obtain any additional information regarding (fire, sound, etc.) test data in this publication is to direct inquiries to:
UNITED STATES GYPSUM

AIRSON LICENSEE

To assure quality system installations, the workmanship of the contractor installing the system is as important as the individual parts used in the system. Therefore, all Airson Contractors are carefully selected and *licensed* by U.S. Gypsum Company. The Airson Contractor organization is a highly responsible group of businessmen offering years of experience in the erection of suspended acoustical ceilings and in the application of this air distribution system to a long list of varied jobs. The contractor has a qualified mechanical engineer who can support you in making design, installation and service decisions and also provide a preliminary cost survey without any obligation.

Engineering Information—The Airson Systems can be adapted to almost any heating or cooling air supply requirement. Complete engineering data backed by extensive laboratory tests and over twelve years of actual job experience are at your disposal.

The AIRSON System is Job Proven—There are thousands of Airson Ceilings throughout the country providing the ultimate in environmental comfort—many of them have been in operation over twelve years. Job listings in your area are available upon request.

The U.S. Gypsum Architect Service Representative, U.S. Gypsum Sales Engineer and Airson Licensees, can supply any information you need to specify and use Airson in your area.

LIMITATIONS OF USE

Airson Acoustone mineral acoustical tiles are designed for normal moisture conditions. They should not be used where they will be exposed to excessively high humidity. They should not be used below wainscot height or where they may be damaged by impact, abrasion or tampering. Airson Acoustone should not be installed until moisture resulting from plastering, concrete or terrazzo work, etc., is no longer a hazard. Ceiling board panels pervious to air flow are not recommended.

Airson Acoustone mineral acoustical tile should not be used for air returns, separate grilles are recommended.

Airson Airflo-T System may not be suitable for use in salt water coastal areas—see recommended Airson lok System —page 7.

AIRSON APPLICATIONS

Office Buildings—Office building applications offer the most formidable challenge to the Airson System because of various engineering control and comfort problems encountered in one area. For example, in the case of the large glass exposure near seated occupants, the Airson System must provide an adequate air curtain adjacent to the glass to compensate for the amount of heat transmitted through the glass and still supply the air at a reasonable velocity to avoid drafts. With the versatility in the four Airson Systems and controllable active Acoustone tile, the designer can pinpoint this air flow along the glass area, and simultaneously can control the air flow in other areas of the room so that the effect of the transfered heat is nullified and a high comfort level is maintained through the entire room. The same is true with "hot spots" in a room. A machine that creates heat, for instance, is a hot spot. With Airson, cool air can be supplied directly toward the machine in large quantities to compensate for its heat production. Correspondingly, balancing can be done in other areas of the same room so that a high comfort level is maintained throughout, even for the operator of the machine.

Schools—In a typical classroom there is need for different levels of penetration. Students sitting at their desks all day require a deeper penetration of airflow than when standing at the blackboard. Therefore, the blackboard area must be treated separately, having less air penetration.

Meeting Rooms—The supplying of an adequate volume of conditioned air throughout the area is the most important engineering consideration. Therefore deeper penetration of the air is needed because the occupants are all seated. Correspondingly, it is important that we maintain a constant volume of air supply with controlled temperature. A reheat coil in the supply duct controlled by a thermostat in the room will maintain a correct temperature level without varying the C.F.M. supplied to the room.

All of these situations are common in modern architecture. Often similar problems are found within the same area. Airson, because it offers control of room air motion, can handle each and every situation so that the entire area is maintained at a high comfort level.

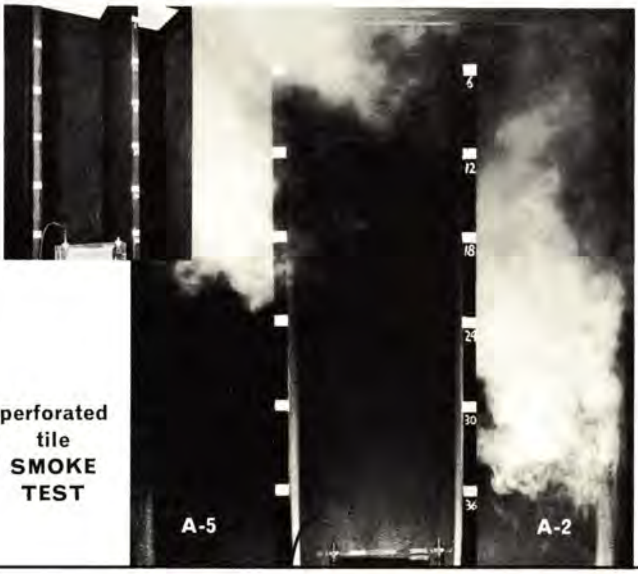
HERE'S PROOF OF REAL PENETRATION

In the test chamber shown, the A-2 and A-5 tile of the Airson-Acoustone system were smoke-tested with a perforated ventilating tile. A common plenum with the same static pressure above the three tiles was used.

The perforated tile has hundreds of tiny holes which "leak" conditioned air into a room. The holes make up about two percent of the total tile surface. They remain "open" at all times and have no means of control.

When smoke was introduced, the superior penetration of the Airson system became evident. The left tile is A-5, the right tile is A-2. The multiholed tile is in the center.

It is obvious in this test that there is little, if any, penetration from tile delivering air through a multitude of tiny holes.



perforated tile SMOKE TEST

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AIRSON ACOUSTONE*
MINERAL ACOUSTICAL TILE

AIR DISTRIBUTION SYSTEM

AIRSON A-2 ACOUSTONE MINERAL TILE

AIRSON A-5 ACOUSTONE MINERAL TILE

DESCRIPTION

The Airson principle of supplying conditioned air uniformly to a space is basically coupling both plenum engineering and the jet theory. The suspended acoustical ceiling and the floor or roof construction above form a plenum, called the Airson Space. This Airson Space is air tight and pressurized with conditioned air assuring proper jet performance through controlled openings which, in turn, provide proper system performance. The result is a draft-free air distribution throughout the space.

AIRSON ACOUSTONE Mineral Tile Systems

The Airson Acoustone Tile is installed on the U.S.G. Concealed Z-Spline System of mechanical suspension. Depending upon the design requirements, either all of the tile in the ceiling areas are slotted to provide Airson jets, or, on jobs requiring fewer jets, a percentage of tile is installed without slots (as specified from charts in the Airson Technical Manual). Tile units can be easily removed or replaced by the Airson R&L Split Angles and L-Splines when accessibility is required.

The Acoustone Mineral Acoustical Tile used is specially designed for use in the Airson System. The bright, non-breathing, foil back surface of the unit adds to the efficiency of the system by preventing the seepage of air through the field of the tile and by providing reflective insulation in the Airson Space. In addition, Acoustone used in the Airson System carries with it all the advantages of high sound absorption, sound attenuation and light reflection.

The Airson Acoustone tiles offer a choice of two jet arrangements: the A-2 and the A-5 systems. The Airson Acoustone A-2 has two orifices per tile. A factory-installed adjustable damper is inserted into the back of the tile controlling both orifices which can be either opened or closed. When fully open, the two orifices provide 0.25% of the tile area.

The Airson Acoustone A-5 tile has five orifices placed parallel with the fissures of the tile. The center orifice is slightly smaller and undampered. The remaining four jets are larger and can be equipped with dampers. The five Airson orifices fully opened represent a total of 0.5% of the tile area. Both the A-2 and A-5 tile can be used with average air quantities and ceiling height applications. The special A-2 orifice arrangement gives a 35% deeper penetration than A-5 at the same flow conditions, making it more applicable to high ceiling-low flow applications.

AIRSON Grid Systems

The Airson Airflo T-2 Grid is a steel, fabricated, hollow tee section with six orifices per lineal foot in the face of the tee. A factory-installed damper is optional. This system may be designed with a selection of various acoustical panels. The static pressures and air flow rates for each combination of panel and Airflo-T are illustrated and engineered on separate charts in the Airson Technical Manual.

The Airson Lok is an aluminum grid system designed with two adjacent orifices. The pair of orifices are spaced 4″ on centers with a factory-installed damper available as an optional feature. Similarly, this system is rated with various panels. Generally, Airson Lok system is applicable to average or higher than normal ceiling heights.

The Airson Lok aluminum suspension system is recommended for use in salt water coastal areas or where other-than-normal moisture conditions prevail. As shown in the details on the opposite page, the system is similar in appearance and function to the steel Airflo-T Runner system.

Supply Air—Normally, terminal duct work is reduced and supply diffusers are eliminated with the Airson Systems. Conditioned air is supplied to the Airson Space through ducts directing the air horizontally into the Airson Space. In this manner, the plenum is kept under a controlled constant air pressure if designed in accordance with Airson Engineering Data. Since there is an equalization of pressure in the plenum, the air flow through the jet openings is equal throughout the ceiling.

Return Air—Air may be returned in the conventional manner through grilles to ducts in the wall or ceiling. Air can also be returned through the grid orifices, by zoning the AIRSON Space for return air with Airsonite barriers. Additional openings may be required in the latter method and may be provided by the use of special Airson spot vents. See Limitations of Use, page 3.

Zoning and Balancing—The Airson Space can be easily and economically zoned to provide conditioned air to meet various design requirements of the occupied space. Airsonite, a strong, flexible, aluminum clad synthetic fabric, was specially designed for use as a zone air barrier material for the Airson Systems.

Additional air distribution control within a zone can be done easily by adjusting the slides in the Acoustone Mineral Acoustical Tile or by adjusting the slides of the Airson Airflo-T and Airflo-Lok in the exposed runner systems. Adjustments are made from below the ceiling without removing any of the ceiling units.

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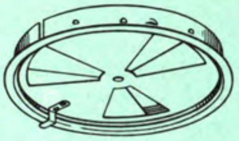
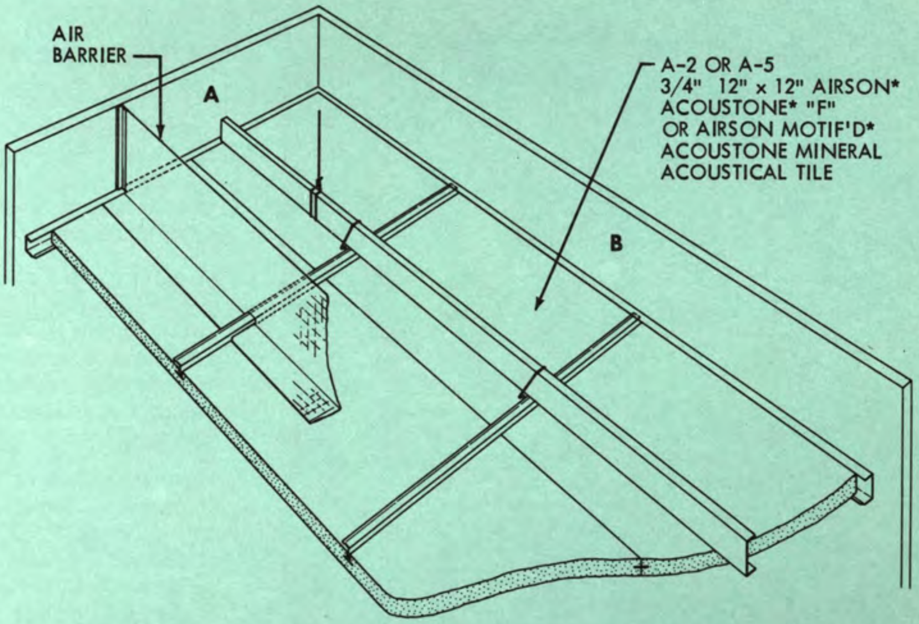
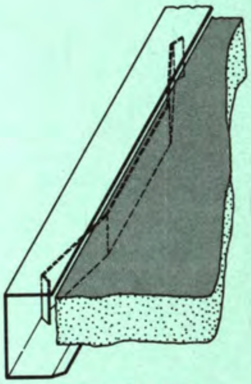
INSTALLATION DETAILS A-2 and A-5

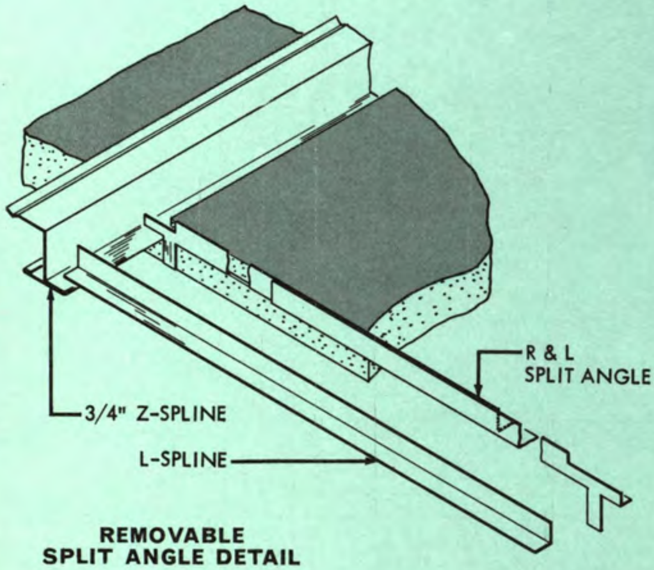


SPOT VENT

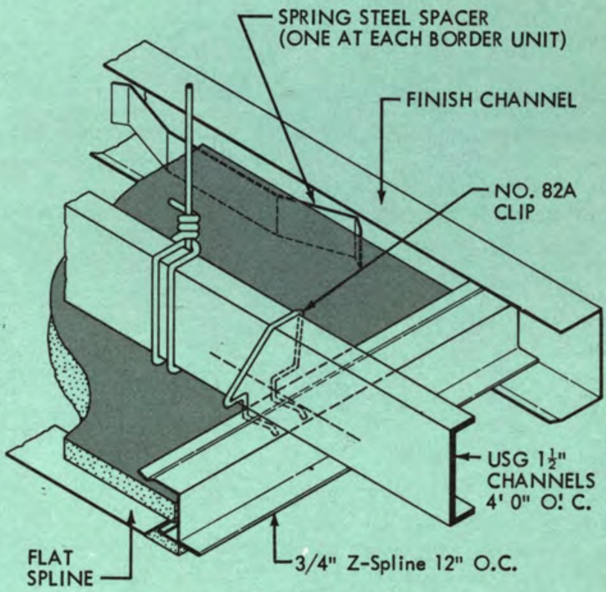




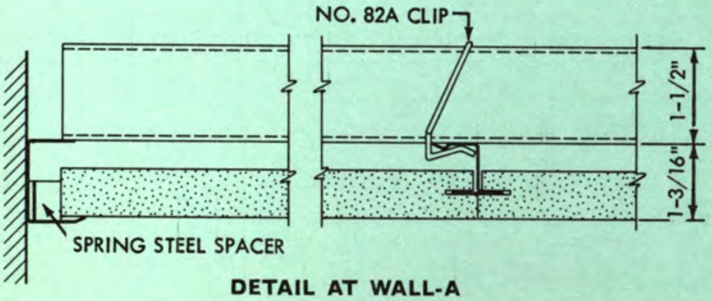
DETAIL AT WALL-A



REMOVABLE SPLIT ANGLE DETAIL



DETAIL AT WALL-B



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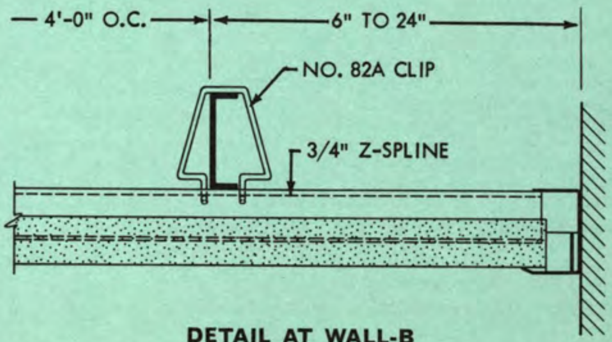

DETAIL AT WALL-B

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AIRSON
AIRFLO-T GRID

AIR DISTRIBUTION SYSTEM

Typical installation of Exposed AIRSON Airflo-T with ceiling board

TECHNICAL INFORMATION

The AIRSON Systems are based on a predictable penetration concept of air distribution. However, to achieve proper air distribution, recommended air velocities at the breathing level must be adhered to and adequate static pressure in the plenum must be specified to assure proper air delivery to the conditioned zone.

U. S. Gypsum Company has collated extensive application and installation information and obtained important performance data to assure the designer of AIRSON quality. The charts and tables in the AIRSON Technical Manual provide the necessary data required to establish system static pressure, penetration and percentage of open tile or lineal feet of open grid or runners in relation to the supplied air flow.

There are situations where large quantities of conditioned air are required. These situations are generally not common but they do exist. For these problem areas, the AIRSON System offers specially engineered devices, called spot vents placed in the center of the acoustical tile. AIRSON offers these in a variety of damper opening sizes to cover every problem area and cfm requirement. These spot vents are ordinarily specified by the AIRSON contractor working through the consulting engineer and are designed into the AIRSON System for overall maximum performance.

SOUND ABSORPTION

ACOUSTONE* PRODUCT	Mounting	Weight PSF	NRC Spec. Range	SOUND ABSORPTION COEFFICIENTS AT CPS					
				125	250	500	1000	2000	4000
AIRSON ACOUSTONE Unslotted	7	1.29	.70—.80	.58	.48	.67	.99	.92	.85
AIRSON ACOUSTONE A-5	7	1.33	.70—.80	.81	.48	.65	.94	.93	.84
AIRSON ACOUSTONE A-2	7	1.35	.70—.80	.85	.49	.68	.98	.92	.88

SOUND ATTENUATION

ACOUSTONE PRODUCT	Suspension System	Size	Sound Trans. Class*	Eleven Frequency Average	ATTENUATION (Decibels) AT CPS										
					125	177	250	354	500	707	1000	1414	2000	2828	4000
AIRSON ACOUSTONE A-5 50/50 Pattern—Plenum Pressure	Concealed Z-Spline	12″ x 12″	36	39.8	23	31	27	30	33	37	40	49	54	58	56
AIRSON ACOUSTONE A-5 50/50—No Plenum Pressure	Concealed Z-Spline	12″ x 12″	36	39.7	23	30	28	30	33	37	41	49	53	58	55
AIRSON ACOUSTONE A-2 50/50—No Plenum Pressure	Concealed Z-Spline	12″ x 12″	36	39.8	25	31	30	30	34	36	40	46	51	59	58
AIRSON ACOUSTONE A-5 50/50—	Concealed Accessible	12″ x 12″	31	35.0	21	27	24	25	29	31	34	41	45	54	54

*RATED in accordance with ASTM E90-61T
SOURCE: Official AMA acoustical testing laboratories

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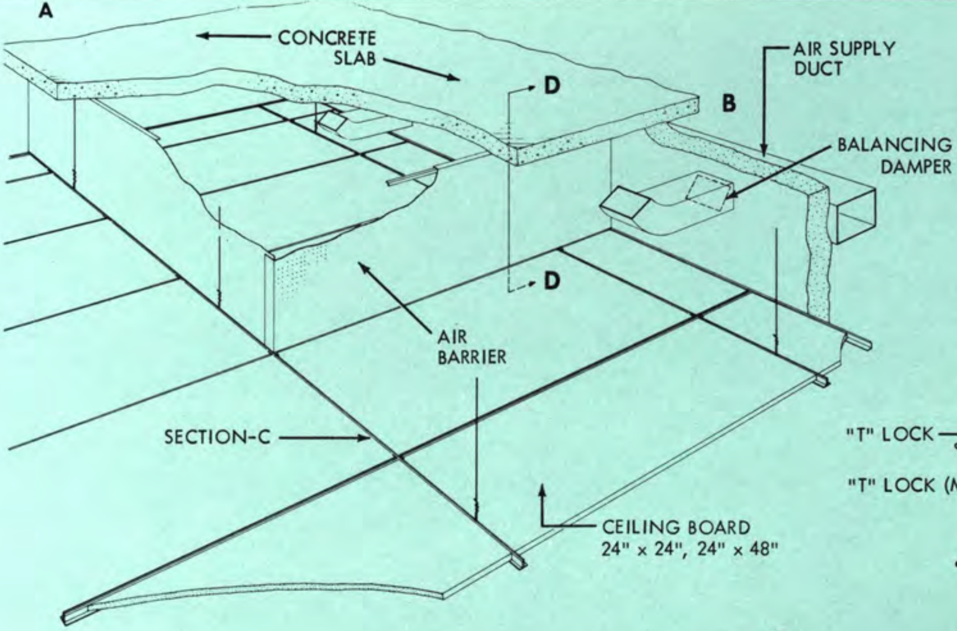
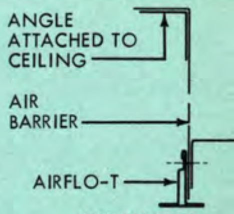
INSTALLATION DETAILS

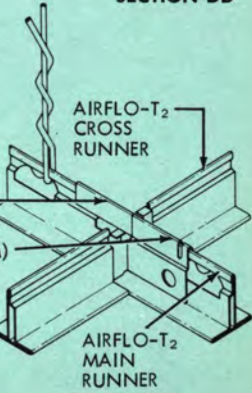
AIRFLO-T AND AIRFLO-LOK GRID SUSPENSION SYSTEMS

AIRFLO-T

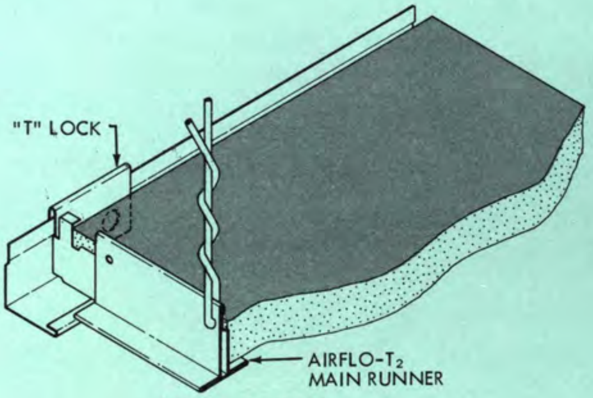




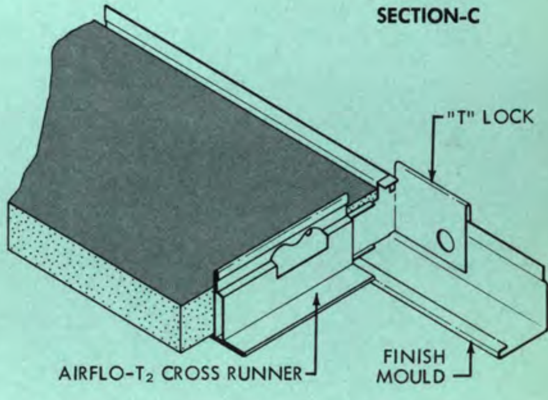
SECTION-DD



SECTION-C

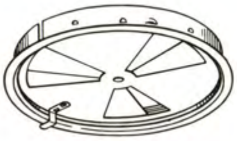


DETAIL AT WALL-A

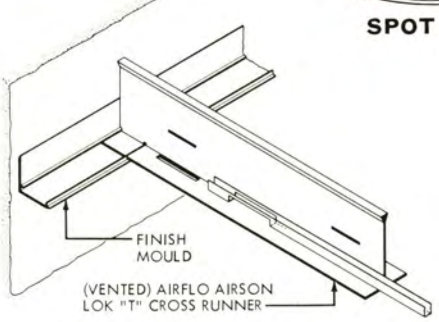


DETAIL AT WALL-B

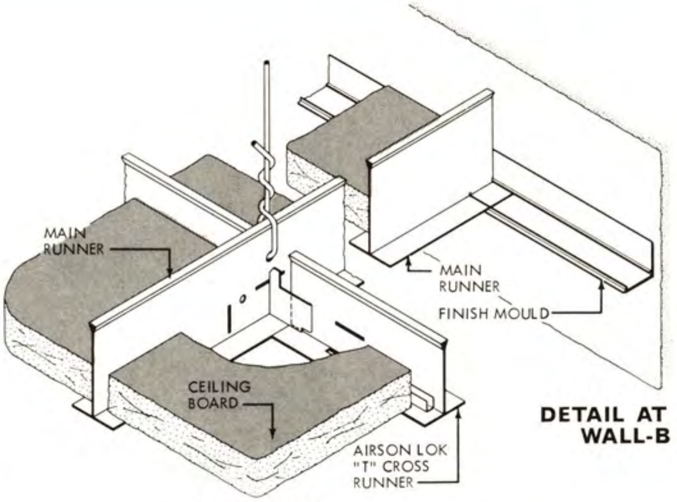
AIRFLO-LOK



SPOT VENT



DETAIL AT WALL-A



FOUR WAY INTERSECTION

DETAIL AT WALL-B

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AIRSON* SPECIFICATIONS

• Since methods and conditions of application and use are beyond our control, the United States Gypsum Company will not be responsible for failure of its products when not used according to directions and specifications.

I. SCOPE

Work Included—This Contractor shall furnish and install AIRSON System of air distribution for heating (and cooling) where shown on the Drawings. All material shall be furnished and installed by an applicator licensed by the United States Gypsum Company. All overhead architectural, mechanical, and electrical work shall be completed, all opening closures shall be installed, and room areas shall be free from excessive moisture prior to the installation of the System.

II. GENERAL PROVISIONS

Work by Others—The heating (and cooling) plant(s), including all supply and return air ductwork to and from the area(s) incorporating the AIRSON System, all included wall and ceiling return air grilles, and any auxiliary heating and cooling units should be installed by others in accordance with the recommendations of United States Gypsum. All electrical fixtures or other equipment to be incorporated in the ceiling suspension systems shall be furnished and installed by others in accordance with the manufacturer's recommendations.

System Performance—The air distribution ceiling system shall contain an incombustible dampering method for balancing air flow into the conditioned space and shall be adjustable from the room side of the ceiling, without removal of the acoustical tile or board. Each slotted tile shall have not more than ½ of 1% open area to produce an air velocity of not less than 25 feet per minute (FPM) and no more than 000 FPM at 000 inches above the floor. (Data obtainable from AIRSON Penetration Charts.) The noise reduction coefficient range of the tile shall be no less than 000. (See A.I.A. File 30-F-1 1962 for specific values.) The ceiling attenuation must average no less than 0000 DB. (See published values for AIRSON-ACOUSTONE.)

III. MATERIALS FOR AIRSON ACOUSTONE* SYSTEM

Acoustical Tile By The United States Gypsum Company:

AIRSON ACOUSTONE Mineral Acoustical Tile—Foil Backed.

¾″ x 12″ x 12″ with jets (and plain).
¾″ x 12″ x 24″ with jets (and plain).

Base For Application:

1½″ cold rolled carrying channel grillage supported by No. 10 gage hanger wire.

MATERIALS FOR AIRFLO-T GRID SYSTEM

Acoustical Ceiling Panel (as selected)

Airflo-T Grillage.

Main Runners of .020 steel having a baked enamel finish.

Cross Runners, Open (and closed) Type (as required by the mechanical engineer from the AIRSON charts).

Mouldings—shall be AIRSON ceiling mould with provisions for locking cross-runners which shall be included at every junction.

Spot Vents for added air supply.

IV. INSTALLATION

Installation of the Airflo-T runners and Cross-T runners shall be in accordance with the manufacturers' recommendations and with the details shown in their literature.

Accessories:

¾″ USG Z-Spline.

Flat Spline of galvanized steel.

Spring steel spacers.

Finish channel and finish channel corner plates.

82-A Clips—to attach Z-Spline to 1½″ cold rolled carrying channels.

R & L Split Angles & L-Splines with tabs for access.

Spot Vents for added air supply.

Base—1½″ channel grillage—No. 10 gage hanger wires shall be securely attached at 4′0″ on center. 1½″ carrying channels shall be tied to the hanger wires and shall be hung level at a maximum spacing of 4′0″ on center. The 1½″ channel adjacent to an intersecting wall shall not be placed more than 12″ from the wall.

AIRSON Slides—shall be attached to the back side of all tile with jets and shall control air passage through the slots. These slides shall be controlled from the room side of the tile by means of a sharp pointed instrument.

AIRSON ACOUSTONE—¾″ USG Z-Splines are attached on 12″ centers and at right angles to:

Metal Grillage by 82-A clips.

The tile shall be supported by inserting the Z-Spline flanges into the kerfed edges of the tile. Abutting edges shall be aligned by inserting flat steel spline (or R & L Split Angle & L-Spline for access) into the kerfs of the transverse edges of the tile. ACOUSTONE finish channel moulding should be provided at the wall intersections and spring steel spacers placed into the channel at 12″ centers. Finish channel corner plate shall be used at all exterior corners. At interior corners where channel is to continue, flanges shall be cut and the web bent to form corners, overlapping channel flanges.

AIRSON Space—shall be provided above the suspended ceiling. The Contractor shall check all Drawings and job conditions and ascertain code or other requirements for covering and sealing the top and sides of the Airson Space and furnish and install the same. He shall make certain under any circumstances that the space is sealed tight against air leakage. *He shall insulate, if necessary any walls of the space exposed to outside temperatures with a minimum of 1″ thick ½ lb. density glass fibre insulation*, by cementing on the same with Minnesota Mining & Mfg. Co. EC-104 cement, or equal. All joints shall fit tightly.

AIRSON Zone Barriers—shall be furnished and installed where shown on the Drawings. Zone Barriers should be constructed of AIRSONITE, which is a permanent, flexible, and incombustible material. Top edge shall be turned at least 2″, coated with adhesive, and held permanently in place with a sheet metal angle nailed securely. (Note: In concrete, use stub concrete nails held with a magnetic holder while nailing.) All edges shall be lapped at least 2″ and cemented together. Bottom edges must be lapped at least 3″ on the back of the ACOUSTONE Mineral Acoustical Tile and cemented directly to the tile.

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A.I.A. File 20
10-D

TECHNICAL INFORMATION

PLASTER BASES

ROCKLATH* PLASTER BASE

METAL LATH & ACCESSORIES

PYROBAR* GYPSUM PARTITION TILE

PARTITION SYSTEMS
ATTACHMENT SYSTEMS

UNITED STATES GYPSUM

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PLASTER BASES

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Solid Partitions....32-33
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Wall Furring....35-36

NOTE TO THE ARCHITECT

The United States Gypsum Company produces a wide variety of plaster bases, steel studs, and lathing accessories, various combinations of which will provide literally dozens of partition, ceiling and wall furring assemblies, each system providing different physical characteristics of structural stability, fire-rating and sound transmission loss. Careful consideration is required in selecting the materials and systems to fit the requirements of each project. This catalog is designed to assist the architect and builder in the selection of those plaster bases and systems for their support. The catalog outlines good practices for normal construction problems. It is not possible to make specific recommendations without knowing the project under design; however, it is possible to generalize. The following recommendations are listed in the order of preference:

Masonry Plaster Bases

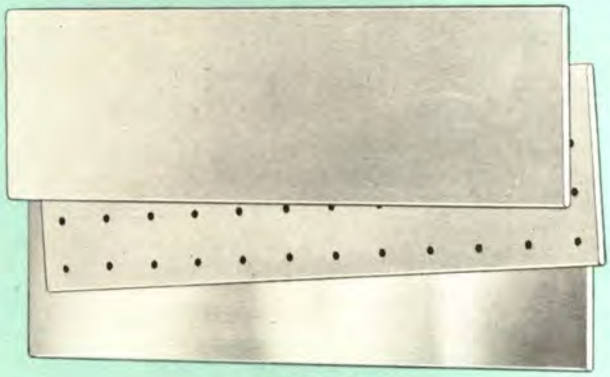
1. Pyrobar or Clay Tile
2. Dense Concrete Block
3. Lightweight Concrete Block

Note: A satisfactory masonry plaster base requires in addition to the best material, attention to the following considerations:

- a. Lintels over door frames
- b. Good mortar, with full mortar beds and end joints
- c. Masonry laid with a running bond
- d. Chases held to minimum in size and number
- e. Control joints in long runs
- f. Control joints where masonry partitions abut concrete structural members.

In other words, a masonry partition to be plastered should be built with the same care as if the masonry was to be left exposed.

PYROBAR



ROCKLATH

Lath Bases

The selection of lath base depends on its use. Two general statements can be made in the selection of a lath base.

1. If the lath is embedded in the plaster as in a solid plaster partition, **Metal Lath** is the preferred base.
2. If the lath and plaster surface is a flat, thin diaphragm supported by a grillage or attached to studs, Rocklath* is the preferred base, unless a scratch coat of wood fiber plaster is used with the metal lath.

Steel Studs

A partition system incorporating steel studs can be evaluated based on their structural characteristics, section modulus and the ultimate tensile strength of the steel used in stud fabrication, and the stress skin action incident to the method of attachment.

No. 1—Trussteel Studs
No. 2—L-P Studs
No. 3—Nonload Bearing Nailing Studs

Solid Plaster Partition

In solid plaster partitions, two inch thickness is the minimum recommended; the performance can be improved by increasing the thickness to 2¼ or 2½ inches. Of the three lathing systems, we recommend the following order of consideration.

1. ¾″ Channels and Diamond Mesh Metal Lath
2. ⅜″ Riblath, Studless
3. ½″ Long Length Rocklath

• Since methods and conditions of application and use are beyond our control, the United States Gypsum Company will not be responsible for failure of its products when not used according to directions and specifications.

*T. M. Reg. U. S. Pat. Off.

The United States Gypsum Company maintains a qualified staff of technical consultants. Architect Service Representatives headquartered in most major markets can assist the architect in resolving technical problems related to specific projects.

PYROBAR* Tile

Pyrobar is a precast gypsum partition tile for use as a gypsum plaster base. It is produced in four thicknesses, both hollow and solid, with indented surfaces.

Sizes: 2″ x 12″ x 30″ Solid
3″ x 12″ x 30″ Hollow and Solid
4″ x 12″ x 30″ Hollow
6″ x 12″ x 30″ Hollow

Complies with ASTM C52 and Federal Specification SS-T-316.
Pyrobar is an economical base for gypsum plaster and provides the greatest fire protection per inch of thickness of any commercial partition assembly.

ROCKLATH Plaster Base

Rocklath plaster base is a gypsum lath in sheet form providing a rigid base for the economical application of gypsum plasters. It is composed of a special gypsum core, faced on the sides and long edges with paper specifically manufactured for this prupose.

Complies with ASTM C37 and Federal Specification SS-P-431a, and Interim Federal Specification SS-L-0030.

Rocklath is an incombustible plaster base and when used with gypsum plaster provides for fire resistant construction. (See fire-ratings in technical data).

Rocklath is rigid and when securely attached adds lateral stability to the assembly.

Rocklath is fabricated in various products, each of which is adaptable to specific uses.

Plain ROCKLATH

Recommended for nail or staple application to wood and nailable steel framing, and for clip attachment to wood framing, steel studs and suspended metal grillage.

Sizes: 16 x 48 inches, ⅜ or ½ inch thick.
16 x 96 inches, ⅜ inch thick.
(Also made 16⅕ inches wide for Pacific Coast area)

Perforated ROCKLATH

Perforated Rocklath is identical in all respects with plain Rocklath plaster base except ¾ inch round holes are punched through the lath 4 inches on center in each direction, one ¾″ diameter hole for each 16 sq. in. of lath area. This provides, in addition to the natural plaster bond, a mechanical key. Higher fire ratings are obtained by the use of perforated Rocklath and gypsum plaster. (See Technical Data Tables, pages 12 & 13.)

Perforated Rocklath plaster base is not recommended for attachment to ceilings, either wood framing or metal grillage, where the only support provided is by clips at edges.

ROCKLATH FIRECODE* Plaster Base

Rocklath Firecode is a gypsum lath which combines all the advantages of Plain Rocklath with additional resistance to fire exposure—the result of a specially formulated core containing special mineral materials.

Long Length ROCKLATH Plaster Base

Long length Rocklath is manufactured ½″ thick, 24″ wide, mill cut to ceiling high lengths as required up to 12 feet, and is formed with longitudinal "V" edges.

This product is designed primarily for use as the plaster base in 2″ solid Rocklath and plaster partition systems. (See 2″ Solid Rocklath and Plaster Partition Section for Details.)

TUFCON† Base

Tufcon Base is a tapered edge gypsum lath manufactured in large sheet form, incorporating a special face paper which provides controlled suction characteristics. The material is available in ½″ and ⅝″ thicknesses, plain and insulating, and in ⅝″ Type "X" where fire-resistive constructions are required. Sheet size: 4′-0″ width—8′-0″, 9′-0″, 10′-0″, 12′-0″ and 14′-0″ lengths. (Type "X" listed by U.L., Inc. under Label Service.)

Insulating ROCKLATH Plaster Base

Insulating Rocklath provides all the advantages of plain Rocklath as a rigid plaster base, and is manufactured in the same sizes. Bright aluminum foil is laminated to the back of plain Rocklath providing an effective vapor barrier at no additional labor cost.

Long Length Insulating ROCKLATH Plaster Base

Long length Insulating Rocklath is manufactured ⅜″ thick, 24″ wide with square edges, and mill cut to ceiling high lengths, as required up to 12′-0″, with bright aluminum foil laminated to the back side.

Designed primarily for furring exterior masonry wall construction. (See USG Exterior Wall Furring System, pages 36 & 37.)

Thermal Resistance (R) of Insulating ROCKLATH*

SURFACE, HEAT FLOW & SEASON			ROCKLATH	
			⅜″	½″
HORIZONTAL	(up)	Winter	2.95	3.08
HORIZONTAL	(dn)	Summer	6.80	6.93
VERTICAL	(hor)	Winter	4.12	4.25
VERTICAL	(hor)	Summer	4.58	4.71

NOTE: Resistances are based on 1960 ASHRAE Guide and include still air film, ½″ sanded-plaster, and air space. (Horizontal surface air spaces are 7½″, Vertical ¾″—4″.)

Insulation—When properly installed with at least a ¾ inch air space next to the foil, insulating Rocklath plaster base provides positive insulation having a resistance of 3.38. When used on horizontal surfaces, for retarding the downward flow of heat, its insulating value is 10.06, or more than doubled. (See Thermal Resistance Chart). Tests and field observations over an extended number of years show that, in normal use, there has been insufficient corrosion of the foil to harm the insulating and vapor barrier characteristics of insulating Rocklath. The effect of dust on insulating Rocklath in a vertical position is negligible. A greater than normal dust deposit accumulation on insulating Rocklath in a horizontal position is required to seriously affect its insulating characteristics.

Economy—Labor costs for application of insulating Rocklath plaster base are no more than for plain or perforated Rocklath.

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*TM Reg. US Pat. Off.
†TM Reg. US Pat. Off. by Plastering Development Center, Inc.

ROCKLATH* & METAL LATH ACCESSORIES

METAL LATH

Metal lath is sheet steel that has been slit and expanded to form a multitude of small mesh openings.

It is made from rust-resisting copper alloy steel and is further protected by dipping the expanded sheet into black asphaltum paint. (Exception: 3.4 lb. diamond mesh when made from galvanized sheets.) For sizes and weights see below. For allowable spans see Technical Data page 16.

USG* JUNIOR DIAMOND MESH LATH

A small diamond mesh metal plaster base (approximately 11,000 meshes per square yard).

A general all-purpose lath. Best for ornamental, contour plastering. The small meshes conserve plaster and reduce droppings. Nationally available. Also available in self-furring type having ¼″ "dimple" indentations spaced 1½″ o.c. each way for use as exterior stucco base, column fireproofing and for replastering over old surfaces.

Size—27″ x 96″.

Weights—2.5 lbs. (End Painted White) and 3.4 lbs. (End Painted Red) per square yard.

USG 4-MESH Z-RIBLATH

A "flat rib" type of lath with smaller mesh openings. Suitable for "double-up" type of plastering. An excellent nail-on lath, or for tie-on work on flat ceilings.

Size—27″ x 96″.

Weights—2.75 lbs. (End Painted White) and 3.4 lbs. (End Painted Red) per square yard.

Limitations of Use—Use Diamond Mesh lath for contour plastering.

USG ⅜″ RIBLATH

A herringbone mesh pattern with ⅜″ V-shaped ribs running lengthwise of the sheet at 4½″ intervals, with inverted intermediate 3/16″ ribs.

The heavy ribs provide exceptional rigidity. Used when supports are spaced more than 16″ o.c. and not more than 24″ o.c. and for 2″ solid studless metal lath and plaster partitions. Used as a centering lath for concrete floor and roof slabs.

Size—27″ x 96″. (Other lengths available.)

Weights—3.4 lbs. (End Painted Red) and 4.0 lbs. (End Painted Yellow) per square yard.

Limitations of Use—Its extreme rigidity makes ⅜″ Riblath unsuitable for contour plastering. Use Diamond Mesh Lath.

Due to ⅜″ rib, **minimum ground thickness must be 1″.**

USG ¾″ RIBLATH

A herringbone mesh pattern with ¾″ deep V-shaped ribs lengthwise of the lath at 6″ intervals.

A structural lath, providing the dual functions of centering and reinforcement for concrete floor and roof slabs.

Sizes—2′ x 8′, 2′ x 10′ and 2′ x 12′.

Weights—.60 lb. and .75 lb. per square foot.

Limitations of Use—Not recommended as a plastering lath.

USG EXPANDED METAL STUCCO MESH

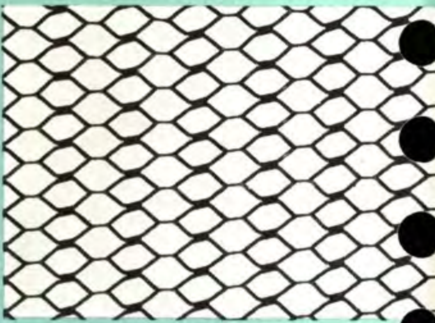
A 1⅜″ x 3⅛″ diamond mesh pattern made of copper alloy steel, asphaltum painted. Designed as a base for exterior stucco, hand or pump applied.

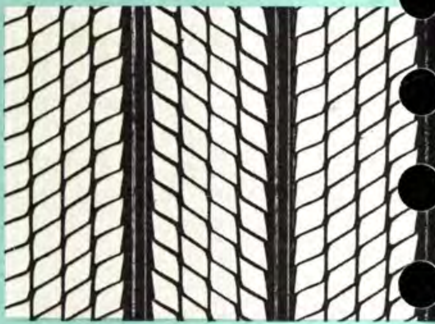
Size—48″ x 99″.

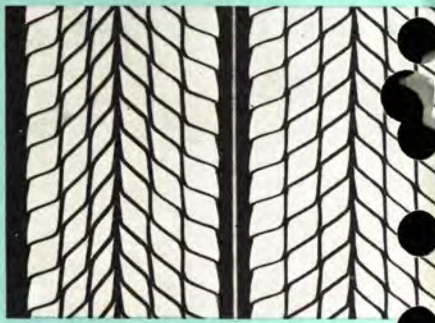
Weights—1.8 lbs. and 3.6 lbs. per square yard.

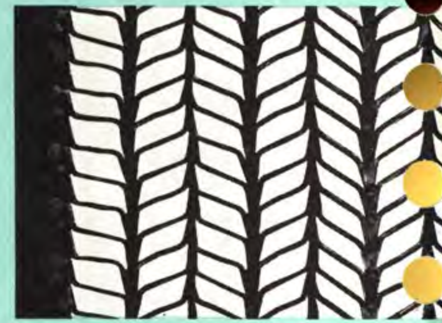
Limitations of Use—Should be applied with 1½″ galvanized self-furring nails.

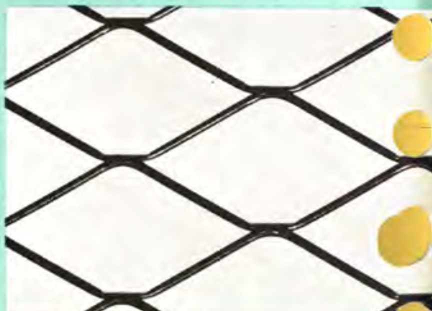
When used over sheathing other than wood, fasten with longer nails, providing a minimum penetration of 1⅛″ into studs.


USG Junior Diamond Mesh Lath


USG 4-Mesh Z-Riblath


USG ⅜″ Riblath


USG ¾″ Riblath


USG Expanded Metal Stucco Mesh

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*T.M. Reg. U.S. Pat. Off.

USG CORNER BEADS

USG corner beads should be used on all external plaster corners to provide: (1) plaster protection, (2) true and straight lines at corners and (3) grounds for plastering.

Lengths: 7′, 8′, 9′, 10′ and 12′. Gauge of Steel: 26 gauge galvanized.

1-A EXPANDED CORNER BEAD

Its wide expanded flanges are easily flexed. Preferred for irregular corners. Provides increased reinforcement close to nose of bead.

4-A FLEXIBLE CORNER BEAD

The general purpose corner bead. Economical and most generally used. By snipping flanges, this bead may be bent to any curved design (for archways, telephone niches, etc.). Can be secured to corners with 9-A Corner Bead clip attached to flanges.

5-A BULL NOSE CORNER BEAD

A ¾″ radius bull nose bead with short flange. Used for rounded corners. Can be secured with No. 9-A Corner Bead Clips attached to flanges, where wide nailing flanges are required.

10-A EXPANDED BULL NOSE CORNER BEAD

A bull nose bead similar to above, but with 2½″ wide expanded flanges. Especially suitable on irregular corners.

USG CONTROL JOINT

USG Control Joint is designed to reduce cracking in large plastered areas. It not only relieves stresses caused by expansion and contraction but provides a plaster ground and can be used to create decorative panel layouts. Made from zinc the control joint is highly resistant to corrosion and can be used on interior and exterior surfaces with plaster or stucco.

Length—10′-0″. Made of zinc alloy metal. Available in ½″ and ¾″ grounds.

USG SCREEDS

USG Screeds are used to divide different types of plaster finishes and as a separation between plaster and a cement base, or a permanent incombustible screed to control plaster thickness and alignment beneath the wood or other rigid base trim.

Lengths—10′-0″. Made of 26 gauge galvanized steel.

3-A EXPANDED BASE SCREED

A flush type ½″ ground (job shimmed for ¾″ grounds) with wide flexible expanded flanges for added reinforcement. Used as a dividing strip between plaster and flush portland cement base.

6-A PLAIN BASE SCREED

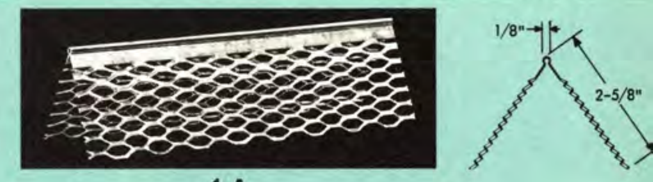
A flush type ½″ ground (job shimmed for ¾″ grounds), used as a straight divider strip between different types plaster, as between gypsum and portland cement.

7-A CURVED POINT BASE SCREED

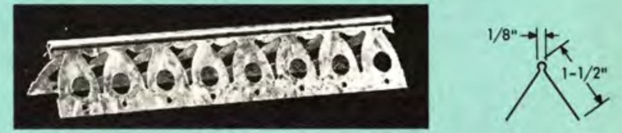
A dividing strip for use between plaster surface and projecting portland cement base. Upper ground is ½″, bottom ground is 1″.

8-A PICTURE MOULD

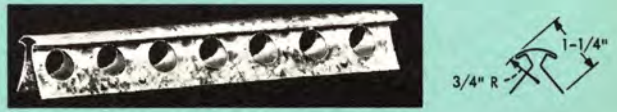
A concealed mould. Attached to lath and plastered flush to the notch opening. Grounds ½″ (job shimmed for ¾″ grounds).



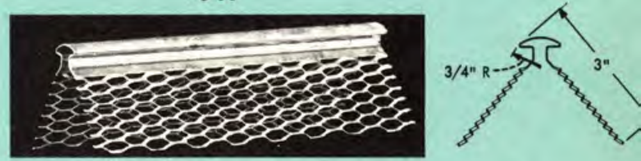
1-A



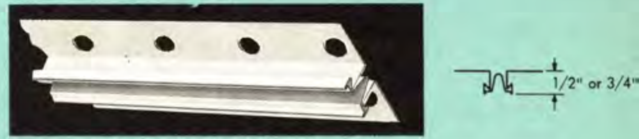
4-A



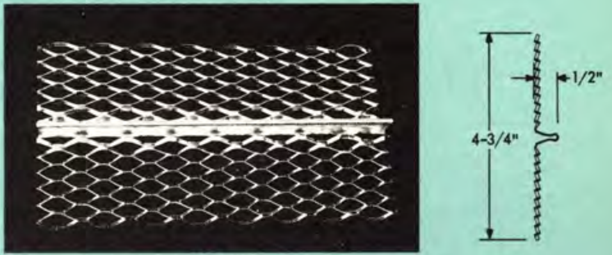
5-A



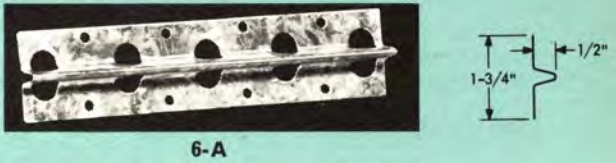
10-A



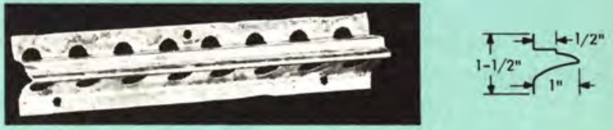
USG Control Joint



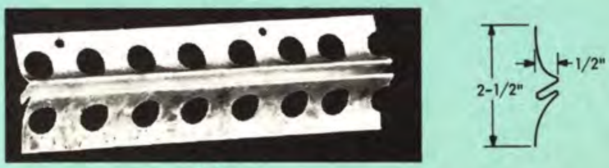
3-A



6-A



7-A



8-A

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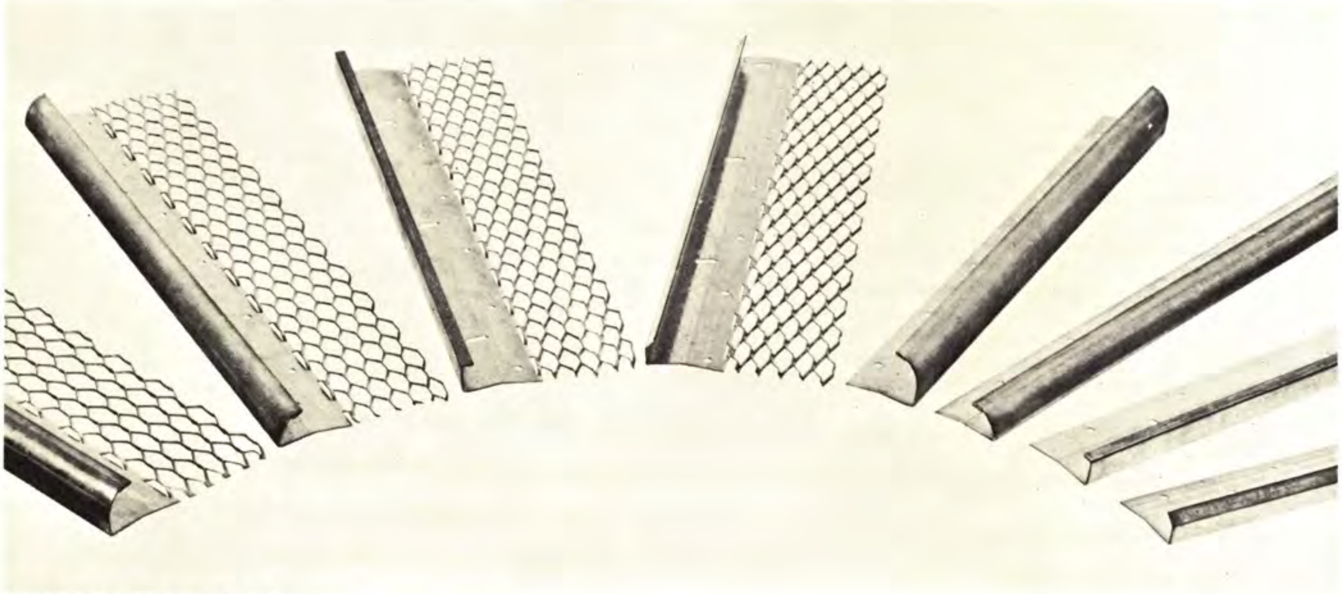
*T. M. Reg. U. S. Pat. Off.

UNITED STATES GYPSUM

ROCKLATH*
PLASTER BASE & METAL LATH ACCESSORIES



USG CASING BEADS

USG Casing Beads are used as a plaster stop and as exposed trim around window and door openings.

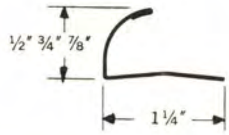
Casing Bead	Style	Flange	Gauge	Grounds
4	Quarter Rd.	Expanded	24	(½″, ¾)
138	Quarter Rd.	Short	24	(½″, ¾, ⅞)
60	Semi-Square	Expanded	24	(½″, ¾)
		Short	24	(½″, ¾, ⅞)
66	Square	Expanded	24	(½″ ¾, ⅝)
		Short	24	(½″, ¾, ⅞)

All casings are furnished in 7′, 8′ and 10′ lengths of galvanized steel for use with metal lath, Rocklath or masonry construction.

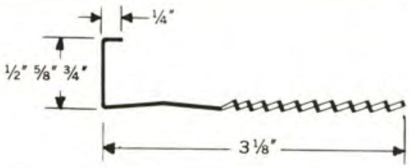
Caution—In order to insure proper grounds for plastering, ¾″ casing beads are recommended for use in conjunction with metal lath, ⅝″ casing beads with all masonry units: ⅞″ casing beads are recommended *when the flange is applied under* Rocklath plaster base; ½″ casing beads are recommended *when flange is applied over* Rocklath.

Casing beads are recommended at junction or intersection of plaster and other wall or ceiling finishes.

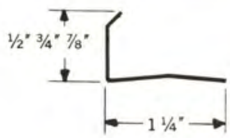
No. 138
QUARTER ROUND
(short flange type)



No. 66
SQUARE
(Expanded flange type)

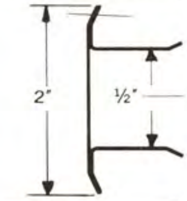


No. 60
SEMI-SQUARE
(Short flange type)



USG 2″ PARTITION TERMINAL

For use as a vertical terminal for 2″ solid metal lath or Rocklath partitions. Can be used as a ceiling runner where 2″ solid partitions abut an unplastered surface. Formed of 24 gauge galvanized and bonderized steel. Standard lengths 8′-0″ and 10′-0″. Available for use with Rocklath.

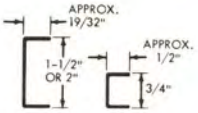


USG LATHING CHANNELS

USG Lathing Channels are cold rolled from 16-gauge steel, black asphaltum painted; used for furring, suspended ceilings, partitions, and ornamental lathing.

Lengths—16′ or 20′

Approx. Weights—¾″—300 lbs. per M Lin. Ft.
1½″—500 lbs. per M Lin. Ft.
2″—590 lbs. per M Lin. Ft.



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ROCKLATH* ACCESSORIES

BRIDJOINT* Clips

Specially formed steel clips designed to provide a rigid alignment of gypsum lath where ends of lath do not fall at or on structural members.

BRIDJOINT Clip B-1

Field clip for ⅜″ Rocklath to support end joints of lath. Also manufactured for use with ½″ Rocklath.

BRIDJOINT Clip B-2

Used in conjunction with B-1 clips to eliminate nailing in corners and angles. For ⅜″ Rocklath only.

BRACE-TITE* Clips

Special wire clips for attaching ⅜″ Rocklath Plaster Base to metal grillages of ¾″ cold rolled channels or Trussteel* Studs when spaced not over 16″ o.c.

BRACE-TITE Field Clip BT-1

Used for suspended ceilings, exterior wall and beam furring and hollow pipe chase partitions. Designed to provide support across the full width of the lath and has spring action to increase rigidity. Designed for use with standard ¾″ cold rolled channels.

BRACE-TITE Starter Clip BT-1

Used in conjunction with BT-1 field clip to start first course of lath.

TRUS-LOK* Field Clip TL-1

For attaching ⅜″ Rocklath Plaster Base to Trussteel* Studs.

TRUS-LOK Starter Clip TL-2

Used in conjunction with TL-1 clips to start first course of lath.

TRUS-LOK Finisher Clip TL-3

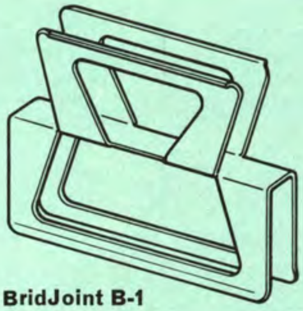
Used in conjunction with Trus-Lok TL-1 Clips and metal runner to finish top course of lath.

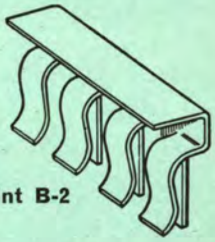
USG BRACING CLIP

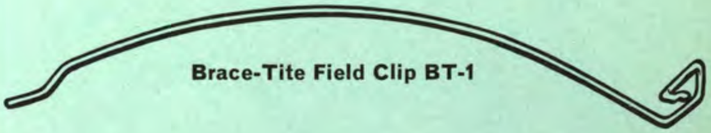
For attaching ¾″ channels to ½″ long length Rocklath as temporary braces in 2″ solid Rocklath and plaster partition construction.

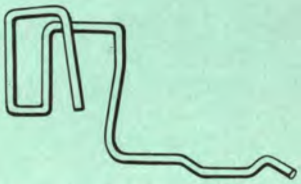
CEILING RUNNER CLIPS

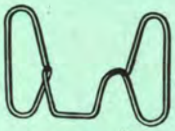
Used for attaching ½″ long length Rocklath to "L" shaped ceiling runner.

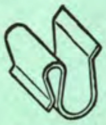

BridJoint B-1

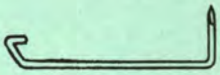

BridJoint B-2

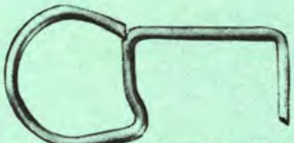

Brace-Tite Field Clip BT-1

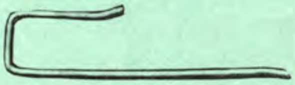

Brace-Tite Starter Clip


Trus-Lok
Field Clip TL-1


Trus-Lok
Starter Clip TL-2


Trus-Lok
Finisher TL-3


Bracing Clip


Ceiling Runner Clip

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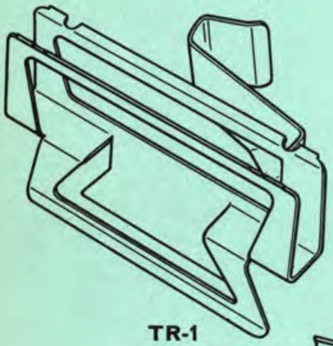
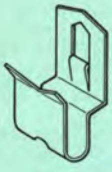
*T. M. Reg. U. S. Pat. Off.

ROCKLATH* PLASTER BASE & METAL LATH RESILIENT CLIPS



TR-1



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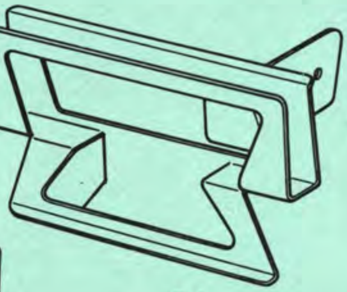
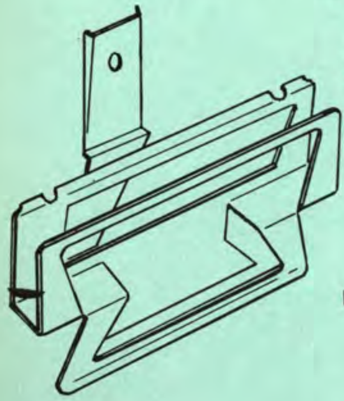
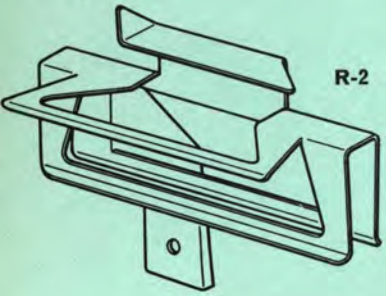


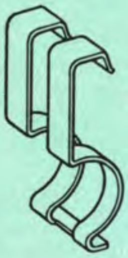
R-1



R-5



R-2



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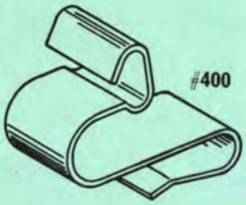

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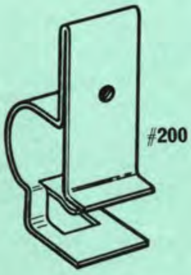

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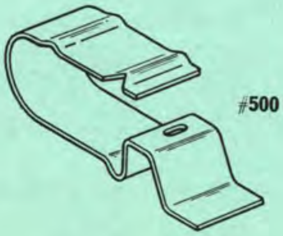

#500

USG RESILIENT LATHING SYSTEMS

USG Resilient Clips are specially formed to provide a non-rigid or floating attachment of ⅜″ ROCKLATH Plaster Bases to the structural frame, affording:

1. Increased protection against plaster cracking due to structural movement.
2. Increased sound transmission loss through the resilient attachment.

Resilient Clip TR-1

For attachment of ⅜″ ROCKLATH Plaster Base to TRUSSTEEL Studs spaced 16″ on centers.

Resilient Starter-Finisher Clip R-SF

Used with starting and last courses of resiliently attached ROCKLATH Plaster Base on wood studs or TRUSSTEEL Stud snap-in runner track.

Resilient Clip R-5

For masonry walls. ROCKLATH is resiliently furred out ½″ from the face of the masonry. (See Attachment details on page 20.)

Resilient Clip R-1

For wood studs or joists spaced 16″ o.c. attached by nailing with 13 gauge, 1⅛″ lathing nail. ROCKLATH is floated ⅜″ free of framing members and held in place by the prongs of the clip.

Resilient Clip R-2

For corners and angles of wood frame construction. Used in conjunction with the R-1 Clips.

Resilient Clip No. 100

For resiliently attaching ¾″ cold rolled furring channels to 1½″ cold rolled runner channels in suspended ceiling construction.

Resilient Clip No. 200

For wood studs or joists. Clips spaced not over 12″ o.c. for ceiling construction or 16″ o. c. for sidewalls.
Attached by nailing with 13-gauge, 1⅛″ lathing nails. Metal lath is floated ½″ free of the framing members by wire tying to a ¼″ pencil rod, nested inside of the tongue of the resilient clip.

Resilient Clip No. 400

For TRUSSTEEL Studs. Snapped in place, 16″ o.c., over the outer flanges of the TRUSSTEEL Studs.
¼″ pencil rod is snapped into the protruding tongue of the resilient cip, and metal lath wire tied in place.

Resilient Clip No. 500

For masonry walls. Nailed or stapled in place over PYROBAR* Gypsum Partition Tile, concrete blocks, clay tile or brick attachment. (See details, page 20.) Metal lath is resiliently furred out ⅞″ from the face of masonry by wire tying to ¾″ cold rolled channels wire tied inside the protruding tongue of the resilient clip.

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*T. M. Reg. U. S. Pat. Off.

ROCKLATH*
& METAL LATH ACCESSORIES

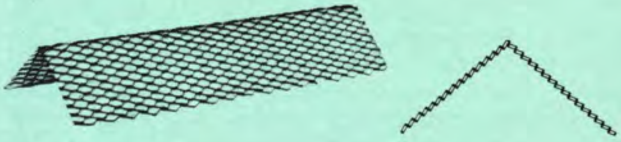
USG SELV-EDGE CORNERITE AND STRIPLATH

Cornerite is a strip of copper alloy, painted, Diamond Mesh lath, bent lengthwise in the center, to form a 100° angle. Cornerite should be used in all internal plaster angles as reinforcement where metal lath is not lapped or carried around; over non-ferrous lath anchored to the lath; over internal angles of masonry constructions. (Cornerite is optional in Resilient, BRID-JOINT* lathing system. If used, it is secured to the lath, not the supports.)

Sizes—2″ x 2″ x 96″—3″ x 3″ x 96″.

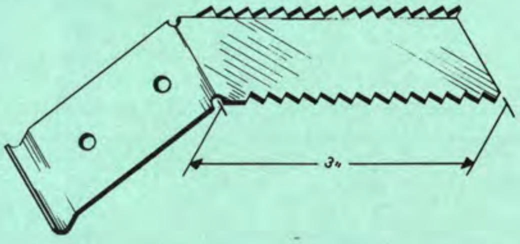
Striplath is a strip of Diamond Mesh lath, copper alloy, painted—used as a plaster reinforcement over joints of non-metallic lathing bases and where dissimilar bases join.

Sizes—4″ x 96″—6″ x 96″.



ADJUSTABLE WALL FURRING BRACKET

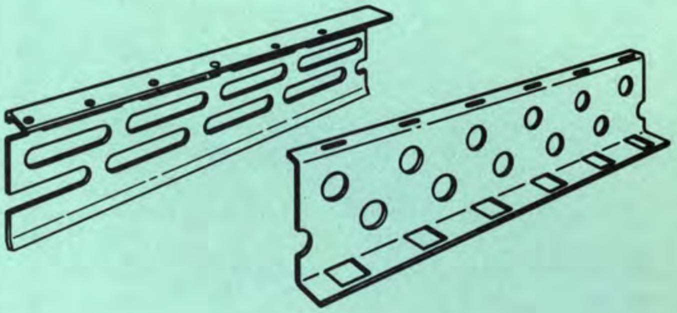
Made of 20 gauge galvanized steel with serrated edges for attaching ¾″ furring channels to exterior masonry walls. Refer to pages 36 & 37 for additional data covering the use of this bracket in Exterior Wall Furring Systems.



USG CEILING RUNNERS (Galv.)

L-Type—A specially designed ceiling runner providing top anchorage for studless metal lath or ROCKLATH solid plaster partitions.

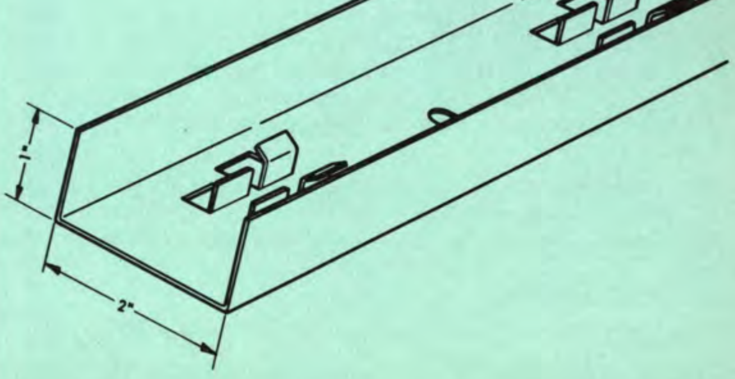
Z-Type—A specially designed ceiling runner providing positive anchorage and alignment of ¾″ channels in either solid partition construction or exterior wall furring.



USG FLOOR RUNNER AND SCREED

A one-piece, channel-type combination floor runner and screed used to anchor 2″ solid lath and plaster partitions to concrete floors with a minimum of labor. Can be cut with a hack saw or tin snips. Fastens to floor with concrete stub nails, rawl drives, or other suitable means. Base requires no grouting, except with studless metal lath partitions. One-inch legs provide an excellent ground establishing the 2″ thickness of the partition. Designed to be covered with asphalt or rubber base may be installed over a 2″ wide wood strip where nailing for wood base is required. Fireproof and economical, it's made of 20-gauge cold rolled steel painted black. 10′ lengths. Weight, 500 lbs. per 1,000 lineal feet. Packaged 100 lineal feet per bundle.

Available with center guides positioned for use with ½″ long length ROCKLATH.



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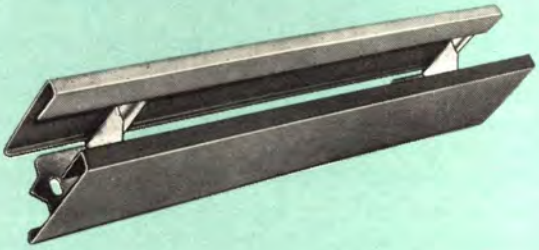
*T. M. Reg. U. S. Pat. Off.

USG*
METAL BASE & CLIP ATTACHMENTS

A flush, metal base system consisting of a 2½″ high face plate formed from 18 or 20-gauge steel, primed with a rust inhibitive paint, adaptable to all plaster partitions or furred exterior walls by the use of specially formed steel clips.

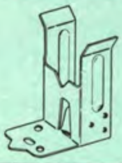
The cross section as designed provides a strong, rugged base. Substantial installation economies effected by the friction mounting snap-on application to the double base clip used in 2″ solid plaster partition or to the single base clip and combination stud base clip used with hollow partitions or furred walls.

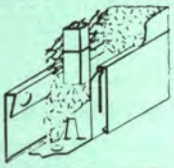
The face plates are easily notched and bent to form inside and outside corners, and are butted and spliced for continuous uninterrupted runs from one type of wall construction to another.



USG Double Base Clip

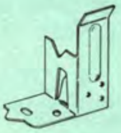
Designed to secure a solid plaster partition to the floor and provide attachment of the USG 2½″ Metal Base Face Plate to both sides. Available for the 2″ and 2¼″ Solid Partitions.

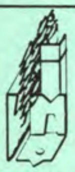




USG Single Base Clip

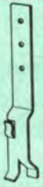
Used primarily as an attachment for the USG Metal Base Face Plate for furred walls or partition systems of varying widths.

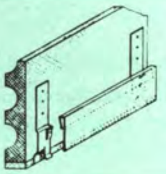




USG Masonry Clip

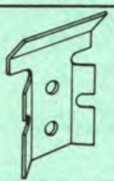
Designed for attachment of the USG Metal Base Face Plate to masonry, providing a ⅝″ plaster ground.

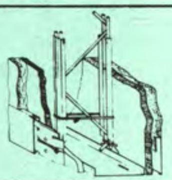




USG Stud Base Clip

For attachment of USG Metal Base Face Plate to studs. Clips may be wire tied, nailed or screwed to the studs.

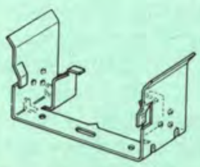


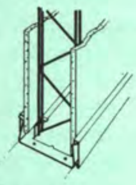


USG Combination Stud & Base Clip

Designed specifically for use in conjunction with Trussteel* Stud Partitions. Combination Stud and Base Clips are available for use with the 1⅝″, 2½″, 3¼″ and 4″ Trussteel Studs, where the lathing systems are (1) conventional Rocklath* plaster base attachment, (2) resilient attachment of either Rocklath or Metal Lath to both sides of the Trussteel Studs, (3) resilient attachment of Rocklath or Metal Lath to one side of the stud and conventional attachment of Rocklath to the other.

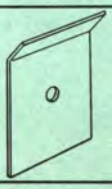
The Combination Stud and Base Clip eliminates the requirement for a floor runner track.

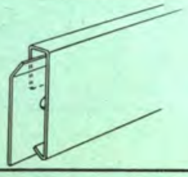




USG Metal Base Splice Plate

Joins the USG Metal Base Face Plates together quickly and in proper alignment.





*T.M. Reg. U.S. Pat. Off.

STEEL STUDS & FURRING MEMBERS

TRUSSTEEL* STUDS

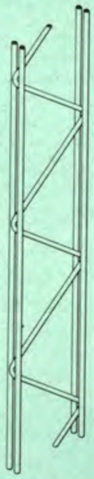
TRUSSTEEL Studs are fabricated in five stud widths, 1⅝″, 2½″, 3¼″, 4″ and 6″, and are mill cut to job lengths.

The Functional Concept of the truss design as formed from No. 7 gauge steel rods, provides excellent accommodations for pipes, conduits and ducts without impairing the strength of the partition assembly.

Strength—The strongest non-load bearing stud on the market. Formed of cold drawn steel wire rods with a tensile strength of 90,000 psi. The tensile strength of cold drawn wire rods is substantially higher than hot rolled sheets from which pressed metal and edge angle studs are formed.

Sound Transmission—The design of the TRUSSTEEL Stud and component accessories for attachment of plaster bases provides a family of sound isolation partition systems—the best in the industry and the most economical.

Fire Protection—1 and 2 hour fire-ratings can be obtained.



L-P STUDS

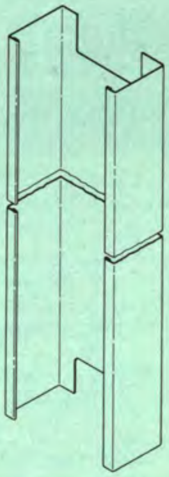
The L-P Studs are rolled formed in three stud widths, 1⅝″, 2½″ and 3⅝″, from a 26 gauge hot dipped galvanized steel.

Economical—The secure rigid screw attachment of the plaster base utilizes the full structural contribution of the lath and plaster membrane, allowing the economical 24 inch spacing of studs. This "metal lumber" framing eliminates the requirement for component accessories.

Limited chaseways are provided at top and bottom of the partition.

Sound Isolation—46 decibel average is excellent for a low cost partition.

Fire Protection—1 hour fire-rating can be obtained.



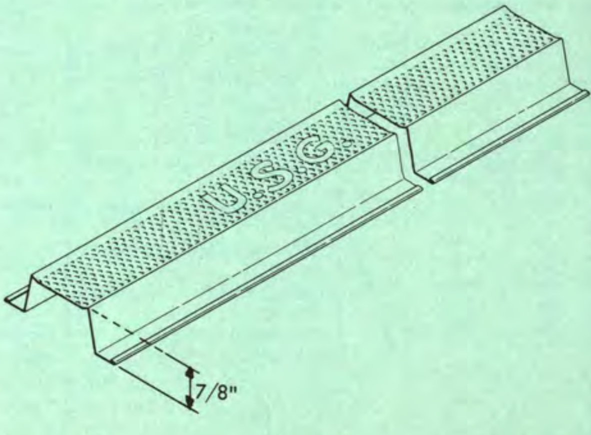
L-P FURRING CHANNEL

The L-P Furring Channel is rolled formed hat shaped section of 26 gauge hot dipped galvanized steel.

The L-P Furring Channel may be clip (L-P Furring Clip) attached to the 1½″ main carrying channel and spaced 16 inches on center for the economical screw (L-P Screw, Type "S" ¾″) attachment of ROCKLATH* as a base for either adhesive attachment of acoustical tile or a basecoat plaster.

Spans 4′-0″ when spaced 16 inches on center.

The L-P Furring Channel provides an incombustible furring for exterior walls and may be spaced up to 24 inches on center for screw attachment of ROCKLATH plaster base.



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*T. M. Reg. U. S. Pat. Off.

FIRE RATINGS

COLUMNS

Plaster Base	Construction	Plaster and Aggregate Proportion	Plaster (1) Thickness	Fire Rating	Laboratory	Test No.
None	Direct Spray application	FIRECODE* Plaster "P" or "V" (2)	2½″	4-hr.	U.L.	4142-6
	Direct Spray application	FIRECODE Plaster "P" or "V" (2)	2⅛″	3-hr.	U.L.	4142-5
PYROBAR* Tile	3″ Hollow, 12 ga. Metal crimp	Plaster—Sand 1:3	⅝″	4-hr.	BMS-92	Table #40
	2″ Solid, 12 ga. Metal crimp	Plaster—Sand 1:3	⅝″	4-hr.	BMS-92	Table #40
Metal Lath	Furred out 1¼″	Plaster—Perlite 1:2, 1:3	1½″	4-hr.	U.L.	3187-3
	Furred out 1¼″	Plaster—Perlite 1:2, 1:3	1″	3-hr.	U.L.	3187-1
	Furred out ½″	Fire Rated STRUCTO-LITE	1⅞″	4-hr.	U.L.	3574-11
	Self-furring, wrapped around	Fire Rated STRUCTO-LITE	1¾″	4-hr.	U.L.	Design #6
	Self-furring, wrapped around	Plaster—Perlite 1:2, 1:3	1¾″	4-hr.	U.L.	Design #6
	Self-furring, wrapped around	Plaster—Perlite 1:2, 1:3	1⅜″	3-hr.	U.L.	Design #8
	Self-furring, wrapped around	Plaster—Perlite 1:2, 1:3	1″	2-hr.	U.L.	3187-2
	Self-furring, wrapped around	Plaster—Sand 1:2, 1:3	⅝″	1-hr.	NBS	Table #40
½″ Long Length ROCKLATH* Plaster Base	Double layer, wiretied—20 ga., 1″ hexagonal wire mesh	Plaster—Perlite 1:2, 1:3	1½″	4-hr.	NBS	278
	Double Layer, wiretied—20 ga., 1″ hexagonal wire mesh	Plaster—Perlite 1:2½	1″	3-hr.	NBS	276
	Single Layer, wiretied—20 ga., 1″ hexagonal wire mesh	Plaster—Perlite 1:2½	1½	3-hr.	NBS	277
⅜″ Perforated	Single Layer—wire tied	Plaster—Perlite 1:2½	1″	2-hr.	NBS	275
	Single Layer—wire tied	Plaster—Sand 1:2½	⅝″	1½-hr.	NBS	274
	Single Layer—wire tied	Plaster—Sand 1:2½	½″	1-hr.	NBS	273

BEAMS

Plaster Base	Construction	Plaster and Aggregate Proportion	Plaster (1) Thickness	Fire Rating	Laboratory	Test No.
None	Direct Contour application	FIRECODE Plaster, Perlite or Vermiculite	1¾″	4-hr.	U.L.	4142-3
	Direct Contour application	FIRECODE Plaster, Perlite or Vermiculite	1½″	4-hr.	U.L.	4142-4
	Direct Contour application	FIRECODE Plaster, Perlite or Vermiculite	1¼″ 1¼″	3-hr. 4-hr.	U.L. U.L. Can.	4142-7 CR-252
Metal Lath	Boxed Beam	FIRECODE Plaster, Perlite or Vermiculite	1¹³⁄₁₆″	4-hr.	U.L.	4142-2
	Boxed Beam	FIRECODE Plaster, Perlite or Vermiculite	1″	4-hr.	U.L.	4142-4
	Boxed Beam	FIRECODE Plaster, Perlite or Vermiculite	1″	3-hr.	U.L.	4142-1
	Wrapped—⅜″, 3.4# Rib lath	Plaster—Perlite 1:2	1½″	4-hr.	U.L.	Design #8
	Suspended Ceiling	Plaster—Perlite 1:2, 1:3, Acoustical Plaster	¾″-½″	5-hr.	NBS	338
	Suspended Ceiling	STRUCTO-LITE* Plaster Type S	¹⁵⁄₁₆″	4-hr.	U.L.	Design #12
	Suspended Ceiling	STRUCTO-LITE* Plaster Type R	¹¹⁄₁₆″	3-hr.	U.L.	3574-5
⅜″ Perf. ROCKLATH	BRACETITE* Lathing System	Plaster—Perlite 1:2½	⅞″	3-hr.	NBS	337

FLOOR & CEILING

Plaster Base	Construction	Plaster and Aggregate Proportion	Plaster (1) Thickness	Fire Rating	Laboratory	Test No.
Direct application	Full Cellular Steel Floor	FIRECODE* Plaster, Contour Application	⅝″-¾″	3-hr.	U.L.	4142-3
	Full Cellular Steel Floor	FIRECODE Plaster, Contour Application	½″	2-hr.	U.L.	4142-1
	Cellular Steel Floor (Blend)	FIRECODE Plaster, Contour Application	¾″-1″	3-hr.	U.L. Can.	CR-252
	Cellular Steel Floor (Blend)	FIRECODE Plaster, Contour Application	¾″	2-hr.	U.L.	4142-2
	Elect-re-form Steel Deck	FIRECODE Plaster, Contour Application	¾″	3-hr.	U.L.	4142-7
	Granco E/R Cofar	FIRECODE Plaster, Contour Application	¾″	3-hr.	U.L.	4142-4
Metal Lath	Cellular Steel Floor—Suspended Ceiling	Wool Fiber (Neat)	⅞″	4-hr.	BMS-92	Table 45
	Cellular Steel Floor—Suspended Ceiling	Perlite 1:2½, 1:2½	⅞″	4-hr.	U.L.	2993
	Cellular Steel Floor—Suspended Ceiling	Fire-rated STRUCTO-LITE* Plaster	¾″	3-hr.	U.L.	3574-5
	Cellular Steel Floor—Suspended Ceiling	Perlite 1:2, 1:3	¾″	3-hr.	U.L.	3789
	Roof Deck Steel Form	Fire-rated STRUCTO-LITE	¹⁵⁄₁₆″	4-hr.	U.L.	Design #12
	Bar Joists—2½″ Concrete Slab	Plaster—Perlite 1:2, 1:3	⅞″	4-hr.	BMS-92	Table 43
	Bar Joists—2½″ Concrete Slab	Wool Fiber (Neat)	⅞″	3-hr.	BMS-92	Table 43
	Bar Joists—2½″ Concrete Slab	Plaster—Perlite 1:2, 1:3	⅝″	3-hr.	U.L.	3454-2
	Bar Joists—2″ Concrete Slab	Plaster—Perlite 1:2, 1:3	⅝″	2-hr.	U.L.	3454-1
	Bar Joists—2¼″ Concrete Slab	Plaster—Sand 1:2, 1:3	⅝″	2-hr.	BMS-92	Table 43
	Bar Joists—2″ Concrete Slab	Plaster—Sand 1:2, 1:3	⅝″	1½-hr.	BMS-92	Table 43

(1) Plaster thickness measured from face of lath or masonry base.
(2) P or V—Perlite or Vermiculite.

*T.M. Reg. U.S. Pat. Off.

FIRE RATINGS

FLOOR AND CEILING (Continued)

Plaster Base	Construction	Plaster and Aggregate Proportion	Plaster (1) Thickness	Fire Rating	Laboratory	Test No.
⅜″ Perf. ROCKLATH Plaster Base	Bar Joist—2″ Concrete Slab	BRACE-TITE, Mesh, Perlite 1:2, 1:3	1″	4-hr.	NBS	311
	Bar Joist—2″ Concrete Slab	BRACE-TITE, Mesh, Prelite 1:2½	½″	3-hr.	NBS	312
	Bar Joist—2″ Concrete Slab	BRACE-TITE, Dia. Wire Perlite 1:2, 1:3	⅝″	3-hr.	NBS	313
	Bar Joist—2″ Concrete Slab	BRACE-TITE, Dia. Wire Perlite 1:2½	½″	2-hr.	NBS	318
	Bar Joist—2″ Concrete Slab	BRACE-TITE, Dia. Wire Sand 1:2, 1:3	⅝″	2-hr.	NBS	345
	Bar Joist—2″ Concrete Slab	BRACE-TITE, Perlite 1:2½	⅝″	1-hr.	NBS	261-287
	Cellular Steel Floor—Suspended Ceiling	BRACE-TITE Dia. Wire Perlite 1:2½	½″	3-hr.	NBS	337
	Wood Joist	Plaster—Perlite 1:2½	½″	1-hr.	NBS	258
	Wood Joist	Plaster—Sand 1:2	½″	1-hr.	NBS	28
Metal Lath	Wood Joist	Plaster—Sand 1:2, 1:3	⅝″	1-hr.	NBS	Table 42

PARTITIONS

Plaster Base	Construction	Plaster and Aggregate Proportions	Plaster (1) Thickness	Fire Rating	Laboratory	Test No.	Weight per sq. ft.	Thickness
PYROBAR* Tile	4″ Hollow—Plastered 2 sides	Plaster—Sand 1:3	⅝″	4-hr.	O.S.U.	T-118	24	5¼″
	4″ Hollow—Plastered 1 side	Plaster—Sand 1:3	⅝″	3-hr.	O.S.U.	T-118	19	4⅝″
	3″ Solid—No Plaster	——————	—	3-hr.	O.S.U.	T-26	13	3″
	3″ Hollow—Plaster 2 sides	Plaster—Sand 1:3	⅝″	3-hr.	O.S.U.	T-118	22	4¼″
	3″ Hollow—Plaster 1 side	Plaster—Sand 1:3	⅝″	2-hr.	O.S.U.	T-1101	16	3⅝″
	3″ Hollow—No Plaster	——————	—	1-hr.	NBS	BMS-92	11	3″
TRUSSTEEL* Stud Metal Lath	4″ Stud—16″ o.c. Dia. Mesh	Plaster—Perlite 1:2, 1:3	1″	2-hr.	U. of B	———	11	6¼″
	3¼″ Stud—16″ o.c. Dia. Mesh	Wood Fiber (Neat)	¾″	2-hr.	BMS-92	Table 31	12	5″
	2½″ Stud—16″ o.c. Dia. Mesh	Wood Fiber (Neat)	⅝″	1½-hr.	BMS-92	Table 31	11	4″
	1⅝″ Stud—16″ o.c. Dia. Mesh	Sand 1:1, 1:2	¾″	1½-hr.	O.S.U.	T-886	19	3⅜″
	3¼″ Stud—16″ o.c. Dia. Mesh	Sand 1:2, 1:2	⅝″	1-hr.	BMS-92	Table 31	16	4¾″
	3¼″ Stud—16″ o.c. Dia. Mesh	Sand 1:2, 1:3	¾″	1-hr.	BMS-92	Table 31	19	5″
TRUSSTEEL Stud Resilient Metal Lath	1⅝″ Stud 16″ o.c. Dia. Mesh	Sand 1:2, 1:3	⅝″	1-hr.	O.S.U.	T-1263	16	4⅛″
TRUSSTEEL Stud Perf. ROCKLATH	2½″ Stud 16″ o.c. TL-1 Clip	Perlite 1:2, 1:2	¾″	2-hr.	O.S.U.	T-1813	11	5″
	1⅝″ Stud 16″ o.c. TL-1 Clip	Sand 1:1, 1:2	½″	1½-hr.	O.S.U.	T-887	12	3⅝″
	2½″ Stud 16″ o.c. TL-1 Clip	Sand 1:2	½″	1-hr.	O.S.U.	T-347	12	4½″
	2½″ Stud 16″ o.c. TL-1 Clip	Perlite 1:2½	½″	1-hr.	O.S.U.	T-118	8.5	4½″
TRUSSTEEL Stud Resilient ROCKLATH	1⅝″ Stud 16″ o.c. TR-1 Clip	Sand 1:2	½″	1½-hr.	O.S.U.	T-1262	12	4⅜″
L-P Stud—Perf. ROCKLATH	2½″ Stud 24″ o.c. Screw attached	Sand 1:2½	½″	1-hr.	O.S.U.	T-1974	12	4¼″
Wood Stud Metal Lath	Stud 16″ o.c.—Dia. Mesh	Wood Fiber (Neat)	⅞″	2-hr.	BMS-92	Table 30	16	5⅜″
	Stud 16″ o.c.—Dia. Mesh	Wood Fiber (Neat)	⅝″	1½-hr.	BMS-92	Table 30	13	5⅛″
	Stud 16″ o.c.—Dia. Mesh	Sand 1:2, 1:2	⅝″	1-hr.	BMS-92	Table 30	18	5⅛″
	Stud 16″ o.c.—Dia. Mesh	Sand 1:2, 1:3	¾″	1-hr.	BMS-92	Table 30	20	5⅜″
Wood Stud ROCKLATH	Stud 16″ o.c.—Plain ROCKLATH	Sand 1:2	½″	1-hr.	O.S.U.	T-1380	15	5⅜″
	Stud 16″ o.c.—Perf. ROCKLATH	Perlite 1:2½	1″	2-hr.	O.S.U.	T-961	14	6⅜″
	Stud 16″ o.c.—Perf. ROCKLATH	Perlite 1:2½	½″	1½-hr.	NBS	252	9	5⅜″
	Stud 16″ o.c.—Perf. ROCKLATH	Sand 1:2	½″	1-hr.	O.S.U.	T-948	15	5⅜″
	Stud 16″ o.c.—Perf. ROCKLATH Resilient R-1 Clips	Fire-Rated STRUCTO-LITE	½″	1-hr.	O.S.U.	T-118	9.5	5⅝″
Solid Plaster	¾″ Channels, Metal Lath	Wood Fiber (Neat)	2″	2-hr.	NBS	116	15	2″
	¾″ Channels, Metal Lath	Perlite 1:2, 1:2	2½″	2-hr.	U.L.	4459	12	2½″
	¾″ Channels, Metal Lath	Sand 1:2, 1:2	2″	1-hr.	O.S.U.	T-129	18	2″
	½″ Long Length ROCKLATH	Perlite 1:2, 1:3	1″	2-hr.	NBS	300	12	2½″
	½″ Long Length ROCKLATH	Sand 1:1, 1:2	¾″	1-hr.	O.S.U.	T-117	16	2″
	⅜″ Rib Metal Lath	Sand 1:2, 1:2	2″	1-hr.	O.S.U.	T-162	18	2″

NOTE: Complete construction of these tests related to these fire ratings are available on request.
(1) Plaster thickness measured from face of lath or masonry base.

SOUND TRANSMISSION

The sound transmission loss (S.T.L.)—or sound isolative efficiency of any construction is dependent upon:

1. **Its mass,** or unit weight
2. **Its limpness,** resiliency or discontinuity
3. **Its integrity,** or lack of openings

Mass—The first rule of thumb in sound isolation—Double the mass and add approximately 5 decibels. In other words, if the average sound transmission loss of a 2″ solid partition is 37 decibels, the average loss of a 4″ solid partition would be 42 decibels, 5 decibels greater.

Most S.T.L. values for plaster construction are based on use of a sanded basecoat plaster which adds mass inexpensively.

Limpness—The second rule of thumb in sound isolation—Double the air space between free standing surfaces and add approximately 5 decibels. It is possible to limply connect two rigid surfaces by resilient connections. For example, a 1⅝″ TRUSSTEEL* Stud, with TR-1 Resilient Clips, ROCKLATH* plaster base and plaster each side, has an average sound transmission loss of 46 decibels and a free air space of 2⅜ inches. By using the same TR-1 Resilient Clips, ROCKLATH and plaster on a 4″ TRUSSTEEL Stud, which doubles the free air space to 4¾ inches, the average sound transmission loss will be increased to 51 decibels.

Integrity—The transmission of sound through a single square inch of opening equals the total loss through 100 sq. ft. of a 3″ PYROBAR* gypsum tile wall plastered both sides.

Testing Facilities—There are three very well recognized testing laboratories, National Bureau of Standards, Riverbank Laboratory and Geiger & Hamme Laboratory. Riverbank Laboratory in December, 1956, changed their testing facilities, so today we have four distinctly different sets of sound transmission data. While all tests are conducted under the ASTM Standard E90, the results between laboratories are not directly comparable because of the size panels tested. It can be noted that while the actual decibel ratings may vary slightly between laboratories, the partition constructions usually fall in the same order of performance.

Ratings—The *Average* sound transmission loss rating is not a dependable basis of analyzing any construction.

The *Classification* of sound transmission loss, as now being reported, is a reliable relationship of the sound transmission loss data related to a predetermined standard criteria.

Since the *Classification* is not available on older tests the full range of frequencies should be carefully investigated. It is always good practice to require a copy of the test to determine the exact construction tested.

LABORATORY TESTS—CEILINGS (Up and over partitions)

SOURCE	CEILING CONSTRUCTION		Frequency										
		Test Number	125 128	175 192	250 256	350 384	500 512	700 768	1000 1024	2000 2048	4000 4096	Ave.	Class
GEIGER AND HAMME (1)	Suspended 1½″ Cold Rolled Carrying Channels 48″ o.c with ¾″ Cold Rolled Runner Channels Spaced 16″ o.c., ⅜″ ROCKLATH-BRACE-TITE* System ⅝″ Gypsum-Sand Plaster	USG-6 Ft.	32	37	34	41	44	49	53	49	56	44	47
	Suspended 1½″ Cold Rolled Carrying Channels 42″ o.c. with ¾″ Cold Rolled Runner Channels Spaced 13½″ o.c., 3.4 Diamond Mesh Metal Lath ⅝″ Gypsum-Sand Plaster	USG-10 Ft.	28	34	35	40	45	48	54	50	59	44	46
	Suspended 1½″ Cold Rolled Carrying Channels 42″ o.c. with ¾″ Cold Rolled Runner Channels Spaced 13½″ o.c., Runner Channels Attached to Carrying Channels with No. 100 Resilient Clips, 3.4 Diamond Mesh Metal Lath, ⅝″ Gypsum-Sand Plaster	USG-9 Ft.	28	35	35	40	45	49	54	50	59	44	46

(1) Size of Test Panels—Two 10′ x 14′ Suspended Ceilings With 30″ Deep Plenum Over 52 db Partition.

*T.M. Reg. U.S. Pat. Off.

LABORATORY TESTS—PARTITIONS

SOURCE	PARTITION CONSTRUCTION	Test Number	Frequency									Ave.	Class	Partition Thickness	Weight Lbs. Per Sq. Ft.
			125 128	175 192	250 256	350 384	500 512	700 768	1000 1024	2000 2048	4000 4096				
NATIONAL BUREAU OF STANDARDS (2)	**STEEL STUDS**														
	3¼″ TRUSSTEEL* Studs 16″ o.c., # 400 Resilient Clips 2 sides 3.4# Diamond Mesh Metal Lath, ¾″ Gypsum-Sand Plaster	429	50	52	52	59	55	56	56	52	60	55	—	5¾″	19
	3¼″ TRUSSTEEL Studs 16″ o.c., 3.4# Diamond Mesh Metal Lath ¾″ Gypsum-Sand Plaster	229	40	34	29	41	37	42	40	48	53	40	—	4¾″	19
	WOOD STUDS														
	2″ x 4″ Studs 16″ o.c., R-1 Resilient Clips 2 sides ½″ Gypsum-Sand Plaster	420	46	44	46	56	54	57	57	50	62	52	—	6⅛″	15
	2″ x 4″ Studs 16″ o.c., #200 Resilient Clips 3.4# Diamond Mesh Metal Lath 2 sides, ¾″ Gypsum-Sand Plaster	425	47	50	48	51	52	54	54	51	61	52	—	5⅝″	21
	2″ x 4″ Studs 16″ o.c., ⅜″ ROCKLATH* Plaster Base ½″ Gypsum-Sand Plaster	148	33	28	31	35	39	44	46	49	66	41	—	5⅜″	15
	2″ x 4″ Studs 16″ o.c., 3.4# Diamond Mesh Metal Lath ¾″ Gypsum-Sand Plaster	228	29	28	28	38	38	43	45	46	54	39	—	5⅛″	18
	SOLID PLASTER														
	¾″ Channels 16″ o.c., 3.4.# Diamond Mesh Metal Lath 2½″ Gypsum-Sand Plaster	172	34	26	33	37	35	37	43	50	57	39	—	2½″	22
	¾″ Channels 16″ o.c., 3.4.# Diamond Mesh Metal Lath 2″ Gypsum-Sand Plaster	529	40	39	30	37	33	35	42	48	50	39	—	2″	18
	⅜″ Rib Lath, 2″ Gypsum-Sand Plaster	503	37	36	29	33	36	32	38	48	55	38	—	2″	18
	½″ Long Length ROCKLATH, ¾″ Gypsum-Perlite Plaster 2 sides	521	32	38	36	37	34	34	31	41	47	37	—	2″	11
	MASONRY—(All sound transmission tests on PYROBAR* partitions are based on ½″ plaster grounds. Standard plaster grounds are ⅝″. Check partition thickness.)														
	4″ PYROBAR, #500 Resilient Clips 1 side, 3.4# Diamond Mesh Metal Lath ⅞″ Gypsum-Sand Plaster, other side ½″ Gypsum-Sand Plaster	317	45	44	44	47	50	53	55	56	59	50	—	6¼″	30
	4″ PYROBAR, R-5 Resilient Clip 1 side, ⅜″ ROCKLATH ½″ Gypsum-Sand Plaster, other side ½″ Gypsum-Sand Plaster	318	43	41	42	46	52	52	56	55	61	50	—	6⅜″	26
	3″ PYROBAR, R-5 Resilient Clip 1 side, ⅜″ ROCKLATH ½″ Gypsum-Sand Plaster, other side ½″ Gypsum-Sand Plaster	314	42	41	43	46	48	51	53	56	60	49	—	5⅜″	24
	3″ PYROBAR, #500 Resilient Clips 1 side, 3.4# Diamond Mesh Metal Lath ⅞″ Gypsum-Sand Plaster, other side ½″ Gypsum-Sand Plaster	313	38	40	37	40	44	48	51	56	59	46	—	5¼″	27
	4″ PYROBAR, ½″ Gypsum-Sand Plaster 2 sides	305	37	42	42	41	38	42	45	49	49	43	—	5″	24
	3″ PYROBAR, ½″ Gypsum-Sand Plaster 2 sides	309	40	38	34	31	39	42	44	48	48	40	—	4″	22
RIVERBANK ACOUSTICAL LABORATORY (Prior to 12/31/56) (3)	**STEEL STUDS**														
	2½″ TRUSSTEEL Studs 16″ o.c., #400 Resilient Clips 2 sides ⅜″ Perforated ROCKLATH, ½″ Gypsum-Sand Plaster	TR-54-73	40	45	49.5	52.6	52.6	52.6	55.5	51.5	47.5	51	—	5″	13
	2½″ Staggered TRUSSTEEL Studs, 16″ o.c. each side ⅜″ Perforated ROCKLATH, ½″ Gypsum-Sand Plaster	TR-53-22	39	42.5	46.5	52	54.5	54.5	54	56.5	59	51	—	5¼″	13
	2½″ TRUSSTEEL Studs 16″ o.c., ⅜″ Perforated ROCKLATH ½″ Gypsum-Sand Plaster	TR-53-23	30	36.5	45	50	52	53	54	54.5	57	48	—	4½″	12
	2½# TRUSSTEEL Studs 16″ o.c., ⅜″ Perforated ROCKLATH STRUCTO-LITE* Plaster	TR-54-42	22.5	29	40	45.5	48.5	50	52	52	54	44	—	4½″	8.5
	2½″ L-P Stud 24″ o.c., ½″ TUFCON* Base—2 layers each side, ¹⁄₁₆″ TUFCON Plaster Finish	TL-63-25	40	38	43	47	49	49	52	50	56	47	52	5⅛″	10.5
	WOOD STUDS														
	2″ x 4″ Studs 16″ o.c., ⅜″ Perforated ROCKLATH ½″ Gypsum-Sand Plaster	TR-56-12	30.5	34	40.5	44	46	47	51	50.5	56	44	—	5⅜″	15
	2″ x 4″ Slotted Studs 16″ o.c. ⅜″ ROCKLATH, THERMAFIBER* Batts, ½″ RED TOP* Fibered Plaster	TL-62-348	39	42	45	49	48	48	50	44	54	47	44	5⅜″	14
RIVERBANK ACOUSTICAL LABORATORY (After 1/1/57) (3)	**STEEL STUDS**														
	1⅝″ TRUSSTEEL Studs 16″ o.c., #400 Resilient Clips 1 side 3.4# Diamond Mesh Metal Lath, ⅝″ Gypsum-Sand Plaster	TL-58-8	32.5	36.5	42	45.5	46	47.5	47	45	50	44	45	3⅝″	18.4
	1⅝″ TRUSTEEL Studs 16″ o.c., ⅜″ ROCKLATH ½″ Gypsum-Sand Plaster	TL-58-7	27	31.5	37	41	42.5	44	46	39	47	39	41	3⅝″	12
	1⅝″ TRUSSTEEL Studs 16″ o.c., 3.4# Diamond Mesh Metal Lath ⅝″ Gypsum-Sand Plaster	TL-58-6	29	30	32	34	36	38	38	38	45	36	32	3⅛″	16
	1⅝″ TRUSSTEEL Studs 16″ o.c., TR-1 Resilient Clip 2 sides, ⅜″ ROCKLATH, ½″ Gypsum-Sand Plaster	TL-61-9	37	40	44	47	48	48	50	41	55	46	39	4⅛″	13
	3¼″ TRUSSTEEL Stud 16″ o.c., TR-1 Resilient Clip 1 side, ⅜″ ROCKLATH, ½″ Gypsum-Sand Plaster	TL-60-128	39	40	45	48	48	48	51	41	54	46	38	5½″	13
	2½″ L-P Metal Studs 24″ o.c., ⅜″ Perforated ROCKLATH Screw applied both sides, ½″ Gypsum-Sand Plaster	TL-62-41	37	39	45	48	48	49	50	44	56	46	37	4¼″	12
	WOOD STUDS														
	2″ x 4″ Wood Studs 16″ o.c., R-1 Resilient Clip, 2 sides, ⅜″ ROCKLATH, ½″ Gypsum-Sand Plaster	TL-60-20	42	43	46	49	50	51.5	51.5	46.5	56	48	47	6⅛″	15
	MASONRY														
	3″ PYROBAR, R-5 Resilient Clip, 1 side, ⁷⁄₁₆″ Gypsum-Sand Plaster on resilient side, ⁹⁄₁₆″ Gypsum-Sand Plaster on other side. ¹⁄₁₆″ lime putty finish each side.	TL-60-127	33	37	38	46	48	50	51	55	64	47	50	5⅜″″	23

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(2) Size of test panels—68¾″ wide by 84¾″ high.
(3) Size of test panels—66½″ wide by 81″ high.

METAL LATH TECHNICAL DATA

TYPES & WEIGHTS OF METAL LATH AND SPACING OF SUPPORTS

Type of Lath	Weight Per Square Yard	Type of Steel	Size Sheets	Maximum Allowable Spacings: Vertical Supports: Wood	Vertical Supports: Metal: Solid Partitions	Vertical Supports: Metal: Others (5)	Horizontal Supports: Wood or Concrete	Horizontal Supports: Metal
Diamond Mesh	2.5 lb.	Copper Alloy (1)	27″ x 96″	16″	16″	12″	(4)	(4)
Diamond Mesh	3.4 lb.	Copper Alloy	27″ x 96″	16″	16″	16″	16″	13½″
Diamond Mesh	3.4 lb.	Galvanized (2)	27″ x 96″	16″	16″	16″	16″	13½″
⅛″ Z-Rib	2.75 lb.	Copper Alloy	27″ x 96″	16″	16″	16″	16″	12″
⅛″ Z-Rib	3.4 lb.	Copper Alloy	27″ x 96″	19″	24″	19″	19″	19″
⅜″ Rib	3.4 lb.	Copper Alloy	27″ x 96″	24″		24″	24″	24″
⅜″ Rib	4.0 lb.	Copper Alloy	27″ x 96″	24″		24″	24″	24″
Stuccomesh (3)	1.8 lb.	Copper Alloy	48″ x 99″	16″ (3)				
Stuccomesh	3.6 lb.	Copper Alloy	48″ x 99″	16″ (3)				
¾″ Riblath	Per Sq. Ft. 0.60 lb. 0.75 lb.	Copper Alloy Copper Alloy	2′ x 8′— 10′ & 12′					

All metal lath (except galvanized) is painted with a rust-inhibitive black asphaltum paint.

Notes (1) Copper alloy lath contains from 0.2% to 0.25% pure copper.
(2) Galvanized lath is cut from galvanized steel.
(3) Stuccomesh generally applied over exterior sheathing.
(4) Not recommended except for fireproofing of steel shapes.
(5) Including vertical furring.

SIZE AND SPACING OF HANGERS

Size and Type	Maximum Ceiling Area Supported Per Hanger
No. 9 Gauge Galvanized Wire	12½ sq. ft.
No. 8 Gauge Galvanized Wire	16 sq. ft.
³⁄₁₆″ Mild Steel Rod (1) (2)	25 sq. ft.
¼″ Mild Steel Rod (1) (2)	25 sq. ft.
³⁄₁₆″ x 1″ Mild Steel Flat (1) (2)	25 sq. ft.

(1) Galvanized Rods and Rust Inhibitive painted or Galvanized Straps recommended where severe moisture conditions may occur.
(2) Not manufactured or supplied by United States Gypsum Company.

SIZE AND SPACING OF MAIN RUNNERS

Size and Type	Approx. wt. per 1000 lineal feet	Spacing of Hangers along Runners	Maximum. Center to Center Spacing of Runners
¾″ Cold Rolled Channel	300 lbs.	up to 2 feet	3′
¾″ Cold Rolled Channel	300 lbs.	up to 3 feet (1)	2′-3″
1½″ Cold Rolled Channel	500 lbs.	up to 3 feet	4′
1½″ Cold Rolled Channel	500 lbs.	up to 3′-6″	3′-6″
1½″ Cold Rolled Channel	500 lbs.	up to 4 feet	3′
2″ Cold Rolled Channel	590 lbs.	up to 5 feet	3′-6″
2″ Cold Rolled Channel	590 lbs.	up to 6 feet	2′-6″
2″ Cold Rolled Channel	590 lbs.	up to 7 feet	2′

(1) For Concrete Joist Construction only.

SIZE AND SPACING OF CROSS FURRING MEMBERS

Spacing of Supports	Size	Approx. wt./1000 ft.	Maximum Spacing
3′-0″	¾″ Channel	300 lbs.	24″
3′-6″	¾″ Channel	300 lbs.	19″
4′-0″	¾″ Channel	300 lbs.	16″

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PYROBAR* PARTITIONS

DESCRIPTION

Pyrobar, a 12″ x 30″, precast, kiln dried, gypsum masonry unit, plaster base is made in:

2″ Solid for column fireproofing
3″ Hollow for partitions and column fireproofing
3″ Solid for partitions and column fireproofing
4″ Hollow for partitions and column fireproofing
6″ Hollow for partitions and column fireproofing

Complies with ASTM Designation C52 and Federal Specification SS-T-316.

FUNCTION AND UTILITY

Fireproof—Pyrobar provides the greatest fire protection per inch of thickness of most building materials.

Lightweight—Reduces dead load, lightest weight of available masonry units.

Plaster Bond—Pyrobar as a gypsum masonry unit is the most compatible masonry plaster base for gypsum basecoat plasters.

Sound Isolation—Pyrobar tile partitions combined with resiliently floated lath and plaster diaphgram provide excellent sound isolation.

Economical—Ease of maintenance and tenant renovations continue to make Pyrobar a leading office building partition construction.

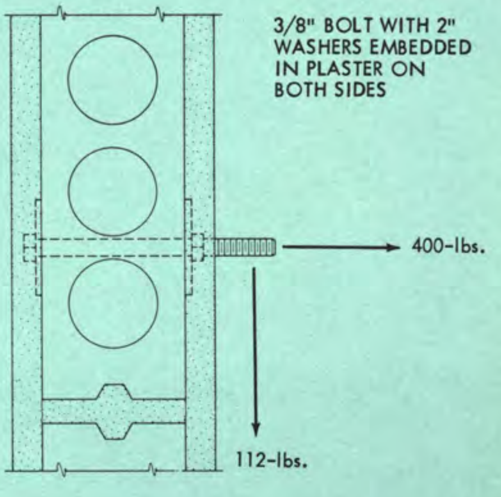
LIMITATIONS OF USE

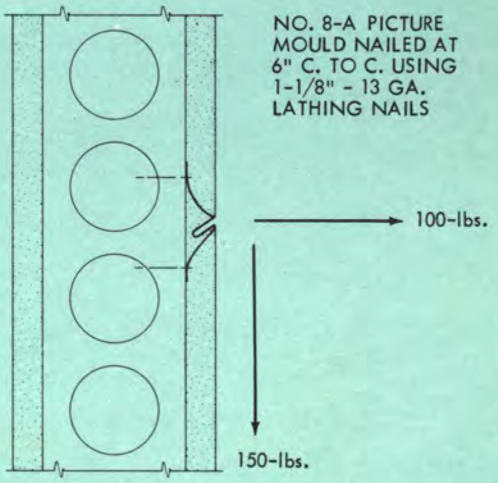
1. Pyrobar gypsum tile is a non-load bearing partition.
2. Portland cement and lime mortars do not bond to Pyrobar. Self-furring metal lath attached to Pyrobar is required to support a Portland cement plaster.
3. Pyrobar, like other masonry plaster bases, is subject to volume change due to fluctuations in temperature and moisture content. Control joints, as detailed on page 20, should be provided to relieve these stresses (see specifications).
4. Pyrobar is not recommended for a masonry back-up of exterior wall construction.

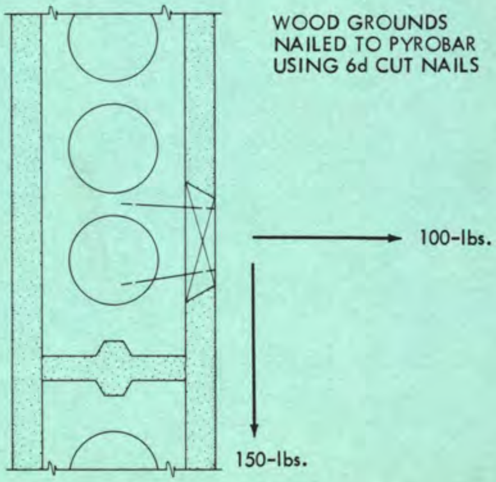
TECHNICAL DATA

Description	Thick-ness	Wt. per Sq. ft.	Limiting Height
3″ Hollow, Unplastered	3″	11 lbs.	13′
3″ Hollow, Plaster 1 side	3⅝″	16 lbs.	13′
3″ Hollow, Plaster 2 sides	4¼″	22 lbs.	13′
4″ Hollow, Plaster 1 side	4⅝″	19 lbs.	17′
4″ Hollow, Plaster 2 sides	5¼″	24 lbs.	17′
6″ Hollow, Plaster 2 sides	7¼″	33 lbs.	30′
3″ Hollow, M/L-Pl, Res. Clip. 1 side	5¼″	25 lbs.	13′
4″ Hollow, M/L-Pl, Res. Clip. 1 side	6¼″	26 lbs.	17′
3″ Hollow, R/L-Pl, Res. Clip. 1 side	5″	23 lbs.	13′

FIXTURE ATTACHMENT




NO. 8-A PICTURE MOULD NAILED AT 6" C. TO C. USING 1-1/8" - 13 GA. LATHING NAILS
100-lbs.
150-lbs.



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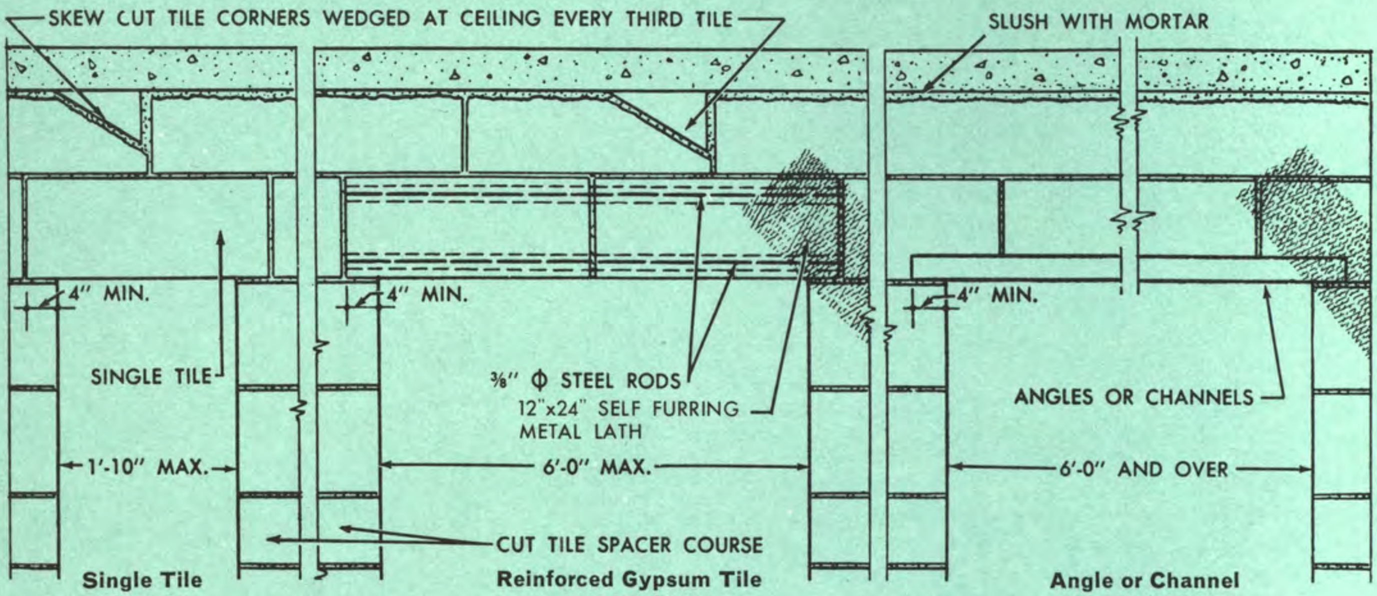
*T. M. Reg. U. S. Pat. Off.

PYROBAR GYPSUM TILE
PARTITION DETAILS

LINTEL CONSTRUCTION

Scale: ½″ = 1′–0″



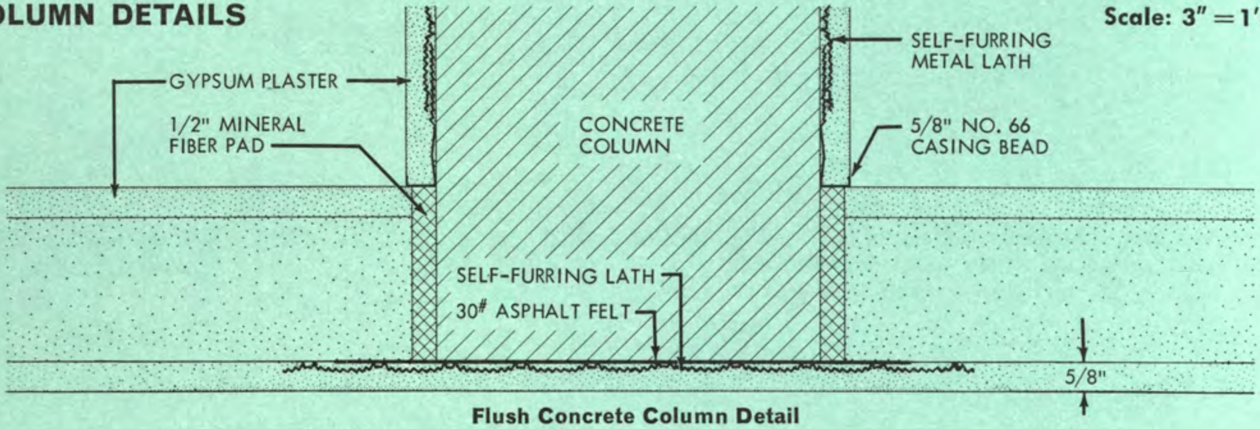
Single Tile Lintel

Reinforced Gypsum Tile Lintel

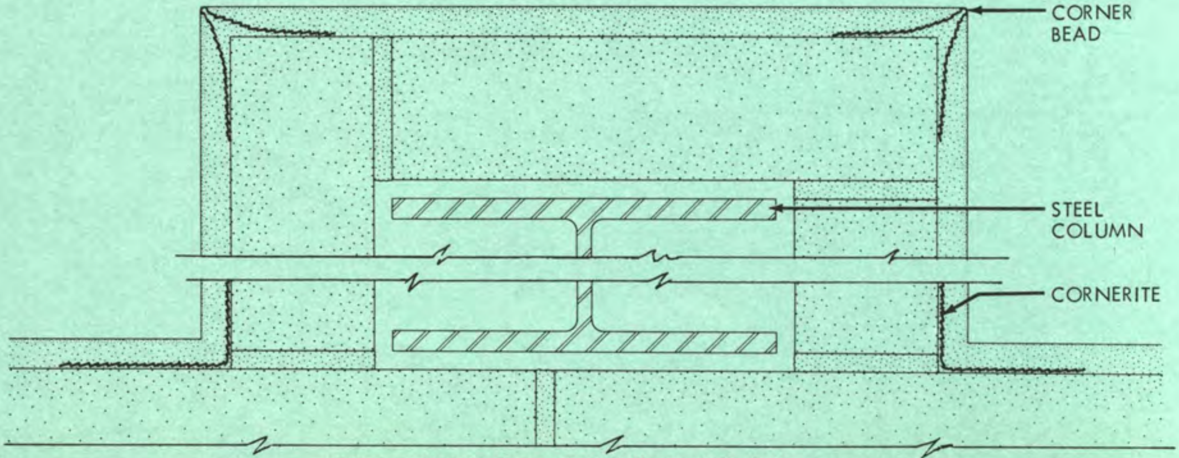
Angle or Channel Lintel

COLUMN DETAILS

Scale: 3″ = 1′-0″



Flush Concrete Column Detail

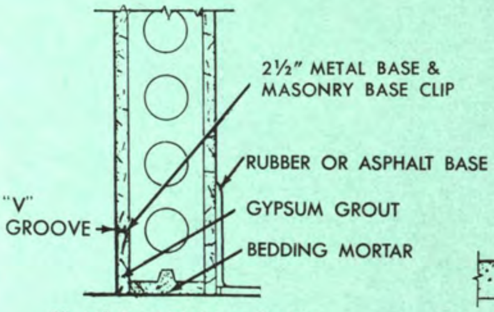


Fireproofed Column and Adjacent Partition

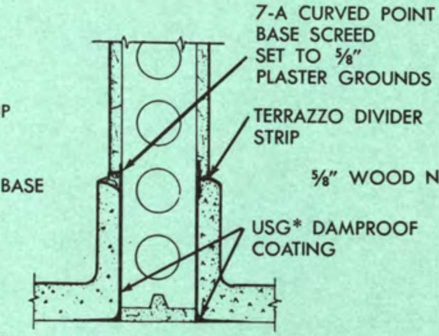
*T. M. Reg. U.S. Pat. Off.

BASE DETAILS

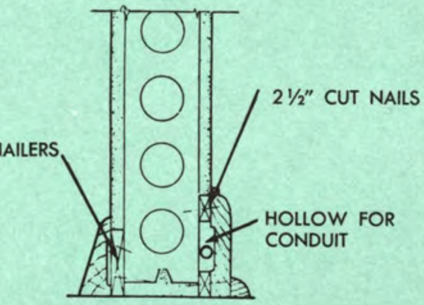
Scale: 1½″ = 1′–0″



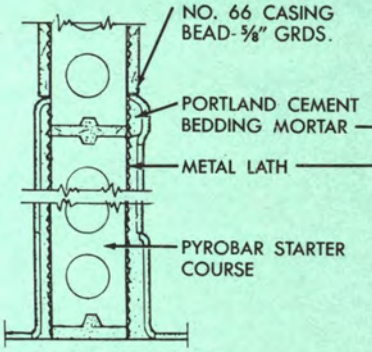
Metal And Rubber Base



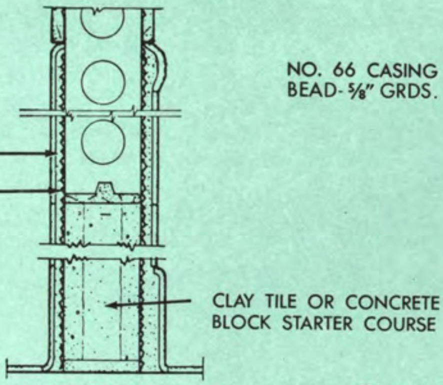
Cement And Terrazzo Base



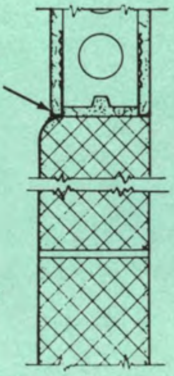
Wood Base



Ceramic Tile Wainscot



Ceramic Tile Wainscot

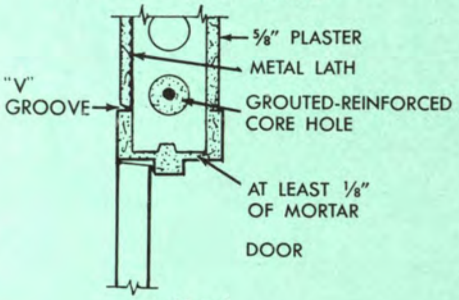


Structural Glazed Tile Wainscot

DOOR FRAME AND FRAMED OPENING DETAILS

Scale: 1½″ = 1′–0″

METAL DOOR FRAME



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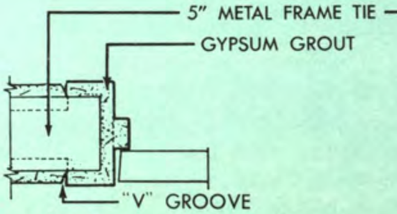
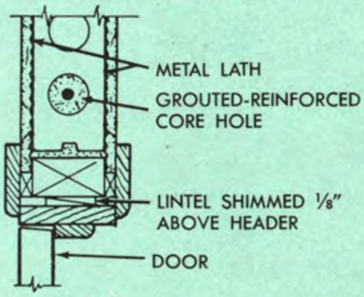


Jamb

WOOD DOOR FRAME



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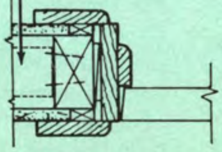
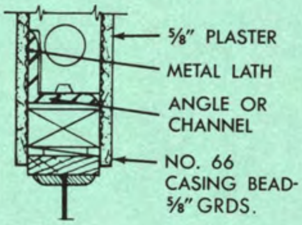


Jamb

BORROWED LIGHT



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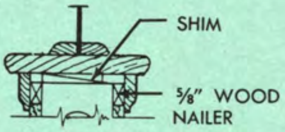
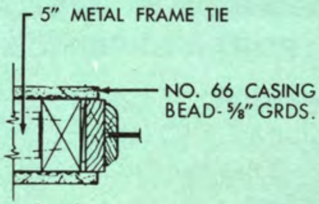


Sill



Jamb

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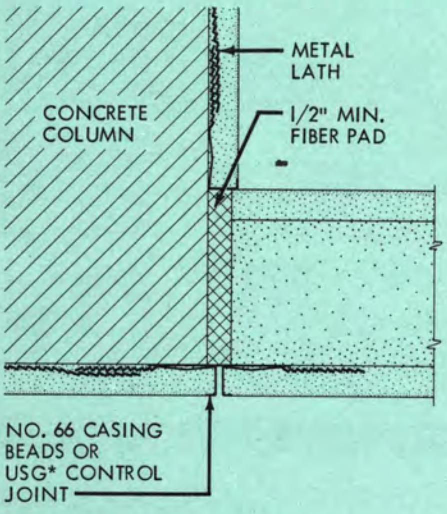
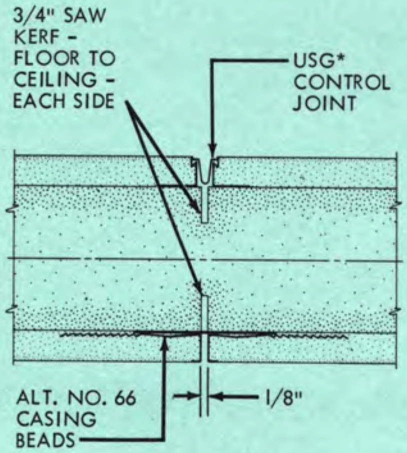
PYROBAR*
GYPSUM PARTITION TILE | SPECIFICATIONS

CONTROL JOINT DETAILS

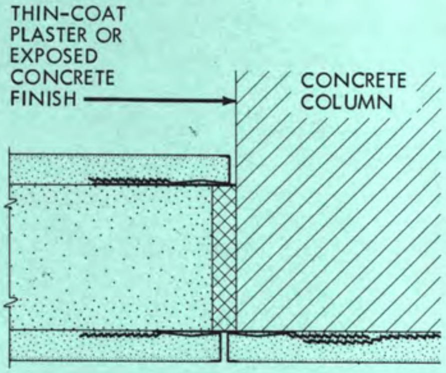
Scale: 3" = 1'-0"



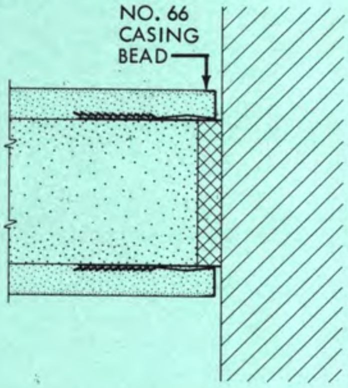
Partition Termination At Flush Concrete Column



Partition Control Joint



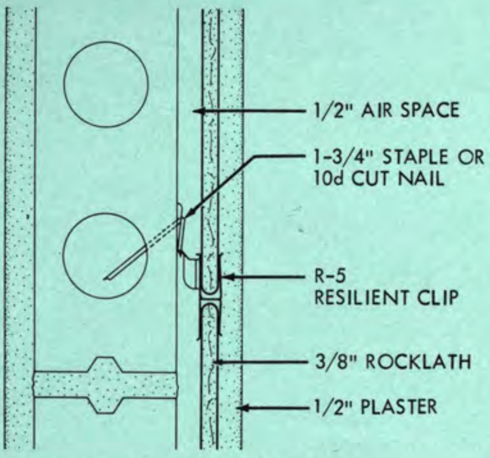
Alt. Partition Termination At Flush Concrete Column



Partition Wall Intersection

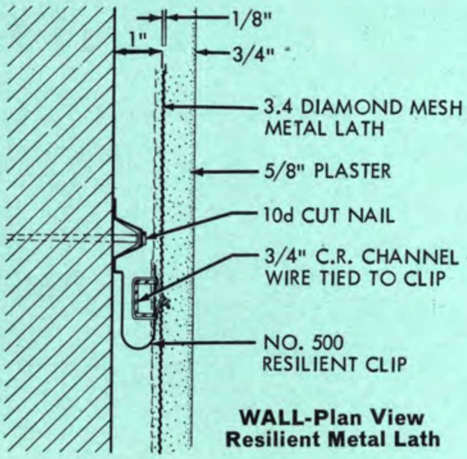
Resilient PYROBAR Partition (Sound Control)

Resilient attachment of metal lath to PYROBAR or to masonry walls or partitions, using #500 Resilient Clips and ¾" channels.



Crossection Wall Elev.
Resilient Rocklath Plaster Base

Resilient attachment of metal lath to PYROBAR partitions, using #500 Resilient Clips and ¾" channels.


1/8"
1"
3/4"
3.4 DIAMOND MESH METAL LATH
5/8" PLASTER
10d CUT NAIL
3/4" C.R. CHANNEL WIRE TIED TO CLIP
NO. 500 RESILIENT CLIP

WALL-Plan View
Resilient Metal Lath

PYROBAR SPECIFICATIONS

SCOPE

Unless otherwise shown on plans, all partitions, including pipe chases, shafts, etc. shall be constructed of gypsum partition tile.

MATERIALS

Gypsum Partition Tile shall be PYROBAR, of sizes indicated, as manufactured by United States Gypsum Company.

Cement for mortar shall be RED TOP Partition Tile cement, as manufactured by United States Gypsum Company.

Sand shall be clean and sharp, complying with ASTM C35.

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ERECTION

All mortar shall be mixed in proportions of 1 part Partition Tile Cement to 3 parts sand, by weight. Mortar shall not be retempered.

After door frames are erected and rough plumbing and wiring is in place, the first course shall be laid with core holes horizontal by bedding in mortar to a true and straight line according to partition layout as shown on plans. Succeeding courses shall be laid to a line in ½″ thick full mortar beds uniformly level in each course. Vertical joints shall be staggered and head joints shall be filled with ½″ of mortar. Cut all joints flush. Use of broken tile shall be kept to a minimum. Chinks and crevices shall be slushed full with mortar.

Partitions shall be well anchored to intersecting masonry walls 12½″ on center vertically with corrugated wall ties or 16d or 20d cut nails imbedded in mortar joints.

Wedge partition tightly at ceiling with skew cut tile corners every third tile. Joints between tile and ceiling shall be slushed full with mortar.

PYROBAR shall not be chased out more than half its thickness for conduit or other piping. Metal lath shall be placed flush over the chase and secured in place.

Steel door frames shall be anchored to the floor and to the PYROBAR with frame ties furnished by door frame manufacturer, minimum three each side (approximately 12″ from top and bottom and at center) laid in mortar joints. Space between tile and door frame jamb shall be slushed full with mortar as tile is laid into frame. Lintel construction shall be held at least ⅛″ above head of frame with mortar.

Borrowed light openings shall be anchored the same as door frames, except only two metal frame ties are required on the jambs (approximately at third points), of openings less than 80 inches high.

OPTIONAL INCLUSIONS

1. **Lintels**—Indicate the lintel construction as selected from page 18.
2. **Fixture Attachment**—Indicate the attachment desired as selected from page 17.
3. **Base** shall be:
   a. USG 2½″ Metal Base secured to PYROBAR partition with USG Masonry Base Clip. (See detail page 19.)
   b. Cement or terazzo base applied over metal lath secured to the first course of PYROBAR which has been coated with USG Dampproof coating from rough floor up to height of wet terrazzo (concrete) base. Care should be taken to get thorough application at joint of PYROBAR with rough floor. (See detail page 19.)
   c. Wood base (plain or hollow for conduit shall be nailed to ⅝″ wood nailers secured to face of PYROBAR with 2½″ (8d) cut nails. (See detail page 19.)
4. **Wood Grounds** for plastering shall be nailed into tile with 2½″ (8d) cut nails at base and around openings to provide a ⅝″ total thickness of plaster.

SPECIAL CONDITIONS

1. Vertical control joints shall be installed in partitions so that the maximum distance between control joints or partition termination does not exceed 30′.
2. When columns or beams are located in line of partitions so that the plane of plaster continues from the PYROBAR Gypsum Tile across the face of the structural member isolation of plaster slab is recommended.
   a. Apply a 15 lb. asphalt felt across the face of the structural members to prevent bonding of the plaster to the column or beam and then use 3.4 lb. self-furring diamond mesh lath across the asphalt felt, securely stapled to the PYROBAR. (See detail page 18.)
   b. Provide a control joint as detailed (see page 20) when required to comply with special Condition 1.
3. Where Portland cement plaster is to be applied to PYROBAR partitions as a bedding coat for ceramic tile facing or other purposes, galvanized self-furring metal lath shall be first applied to the face of the PYROBAR. A USG No. 66 Casing Bead (⅝″ grounds) or other suitable plaster stop shall be used between the Portland cement plaster and gypsum plaster. (See detail page 19.)
4. Pieces of self-furring metal lath at least 12″ x 24″ shall be secured to the tile above and below the corners of openings.
5. 3″ x 3″ cornerite shall be used in all internal plastered corners except where PYROBAR partition abuts load bearing walls, columns or other structural elements.

Resilient (Sound Control) PYROBAR Partitions:

1. Resilient Metal Lath

Securely attach the USG #500 Resilient Furring Clip to the face of the PYROBAR Partition using a 10d cut nail. Clips to be spaced not to exceed 16 inches on center both ways.

¾″ cold rolled channels shall be erected vertically, the legs of the channel nested into the grooves on the inner face of each clip and saddle tied.

3.4 lb. diamond mesh lath shall be secured to furring channels as herein specified.

2. Resilient ROCKLATH

USG R-5 Resilient Clips shall be securely attached to the PYROBAR tile with an angular driven 2″ fence staple with one leg penetrating the PYROBAR and the other bridging the attachment flange of the clip.

The clips shall be spaced at a maximum of 16 inches on center, and at each lath end joint.

Succeeding courses of ROCKLATH* plaster base shall be similarly applied with end joints staggered.

At the floor and ceiling line shim out the ROCKLATH using a narrow piece of ROCKLATH and nail in place.

STEEL COLUMN FIREPROOFING

1. PYROBAR Gypsum Tile (2″ solid) (3″ Hollow) shall be laid plumb and true, with tile interlocking at corners, with successive courses staggered. Other construction details shall be in accordance with appropriate Fire Test Report.

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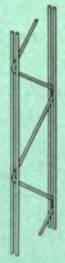
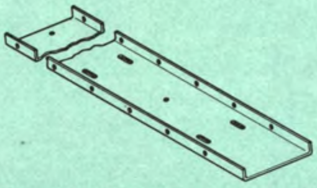
TRUSSTEEL*
STUD PARTITIONS

PARTITION THICKNESS—Normal Plaster Grounds

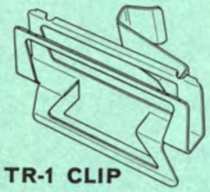
Stud Width	Section Modulus	ROCKLATH and Plaster or ⅜″ Riblath and Plaster	Diamond Mesh or ⅛″ Riblath and Plaster	Resilient ROCKLATH & Plaster	Resilient Metal Lath & Plaster	Maximum Partition Heights (1)			
						ROCKLATH		Metal Lath	
						Studs 16″ o.c.	Studs 24″ o.c.	Studs 19″ o.c.	Studs 16″ o.c.
1⅝ in.	.0635″³	3⅝ in.	3⅛ in.	4⅛ in.	4⅛ in.	9′	—	—	9′
2½ in.	.1056″³	4½ in.	4 in.	5 in.	5 in.	15′	9′	14′	15′
3¼ in.	.1420″³	5¼ in.	4¾ in.	5¾ in.	5¾ in.	21′	13′	18′	21′
4 in.	.1825″³	6 in.	5½ in.	6½ in.	6½ in.	22′	16′	20′	22′
6 in.	.277″³	8 in.	7½ in.	8½ in.	8½ in.	26′	20′	24′	26′



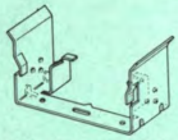
TRUSSTEEL STUD



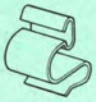
REGULAR RUNNER TRACK



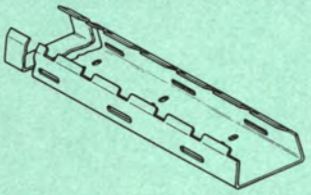
TR-1 CLIP



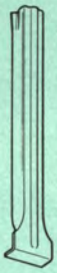
COMBINATION STUD BASE CLIP



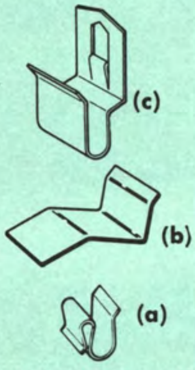
#400 RESILIENT CLIP



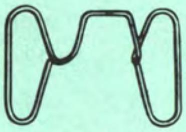
SNAP-IN RUNNER TRACK



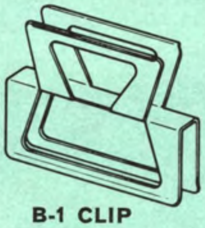
STUD SHOE



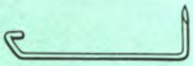
STARTER CLIPS



TL-1 CLIP



B-1 CLIP



FINISHER CLIP

NOTES

1. The 1⅝″ TRUSSTEEL Stud ROCKLATH Plaster Base and plaster partition was designed to finish 3⅝″ overall, to permit its substitution for a 4 inch exposed concrete block partition.
2. All fire-rated partitions require the TRUSSTEEL Stud attachment to the ceiling runner track by the stud shoes.
3. Snap-In Runner Track with studs cut accurately to length may be used for a floor and ceiling attachment where the construction is non fire-rated.

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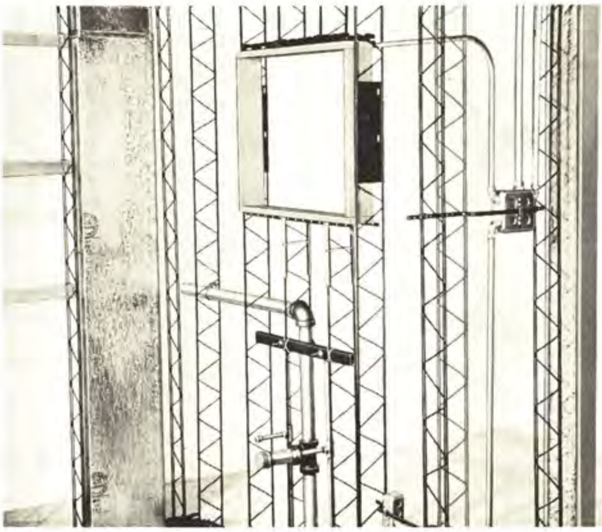
TRUSSTEEL* STUD PARTITIONS



DESCRIPTION

TRUSSTEEL Stud Partitions provide a very versatile alignment of partition systems. The TRUSSTEEL Studs provided in widths of 1⅝″, 2½″, 3¼″, 4″ and 6″, with limiting heights from 9′-0″ to 26′-0″ provide a strong frame for direct attachment of ROCKLATH* plaster base or metal lath. In addition to these partitions, resilient attachment of ROCKLATH or metal lath substantially improves the sound transmission loss characteristics by providing isolated faces.

FUNCTION AND UTILITY

The open web of the truss design provides maximum free space for encasement of pipes, ducts or conduit horizontally, vertically or diagonally, without impairing the structural integrity of the partition. Web members may be cut easily to accommodate larger ducts and pipes without seriously impairing the strength.

The TRUSSTEEL Stud Partitions provide:

1. **Sound Isolation**—The TRUSSTEEL Stud ROCKLATH plaster base Parition provides a very good sound isolation, 46 to 48 decibel average, at a low cost. The TRUSSTEEL Stud Partition with resilient clipped attachment of ROCKLATH and metal lath provides excellent sound isolation, 50 to 55 decibel average. (See technical data pages 14 and 15.)
2. **Fire Protection**—Incombustible components provide 1 and 2 hour protection. (See technical data pages 12 and 13.)
3. **Strength**—The TRUSSTEEL Stud is formed of No. 7 gauge, cold drawn wire rods, with a tensile strength of 90,000 psi. The resistance moment computed on the section modulus with the high tensile strength produces the strongest non-load bearing stud.
4. **Economical**—No other assembly provides the structural integrity, the strength, the sound isolation, the open core wall, and the fire protection at a comparable cost.
5. **Performance**—TRUSSTEEL Studs have been used since 1933, however, the real impetus to their use has been since 1952 when USG released the clip attachment for ROCKLATH, which increased the strength, improved the sound transmission loss by 8 decibels, and reduced the cost by 12½ percent. Approximately 50 percent of all steel studs used nationally are TRUSSTEEL Studs. The continued high level of use indicates their acceptance based on their performance.

LIMITATIONS

1. A non-load bearing partition.
2. Stud spacing limited to 16 inches on center for ROCKLATH and 3.4 lb. diamond mesh lath, 24 inches on center for a ⅜″ Riblath.
3. *Steel Door Frames:*
   a. Frame anchorage to the floor shall be by two power driven attachments, or equal, for each jamb. The floor anchors shall be welded to the frame in a manner that provides rigidity to the frame at the floor line.

   b. Flange returns must be rigid to control chip cracking due to vibration. Flange returns welded to a minimum of four jamb anchors and grouting the frame with gypsum mortar will minimize vibration.

   c. Frame should be fabricated of not less than 16 gauge metal.

   d. Lath and plaster should key into the frame and not terminate against the metal return.

   e. Diagonal reinforcement, 12″ x 18″ 2.5 lb. self-furring diamond mesh metal lath, should be applied at door frame corners.

   f. 16″ x 96″ ROCKLATH Plaster Base is recommended over door frames to eliminate butt joints.

   g. Adequate anchorage of the TRUSSTEEL Studs over the door head is necessary. Use of ¾″ channel bracing installed horizontally over the door and tied to all studs within 24″ each side of the frame is recommended.
4. To retain maximum sound isolation, the integrity of the partition or ceiling should not be voided by openings such as electrical outlets, medicine cabinets, vents, etc., so as to create sound leaks.

   Where mechanically suspended acoustical tile ceilings are used, partitions should extend from structural slab to structural slab, closing all openings.

   When sound isolation is a serious consideration use sand aggregate only, do not use lightweight aggregates.

   A TRUSSTEEL Stud Resilient Partition used as a sound barrier should have a neoprene gasket, a felt gasket or caulking under the floor and ceiling track to seal the voids between track and structural slabs.

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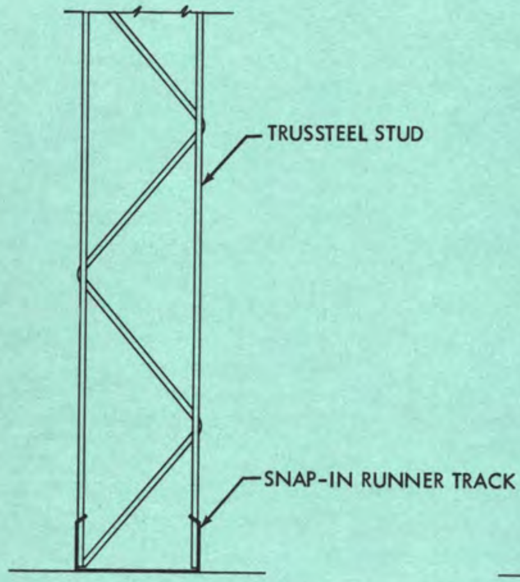
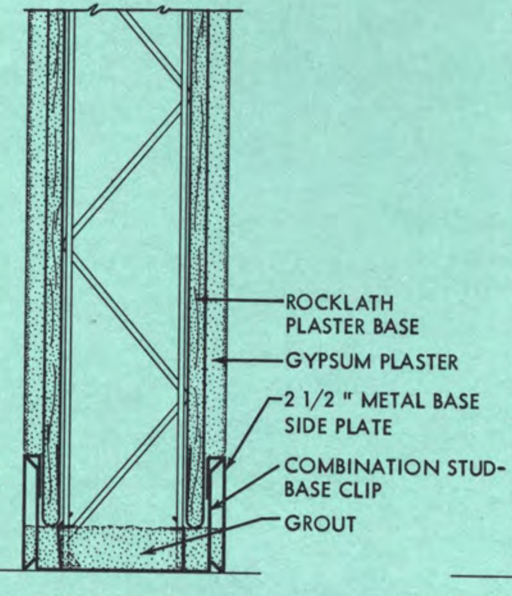
TRUSSTEEL*
STUD SYSTEM DETAILS

FLOOR ATTACHMENT

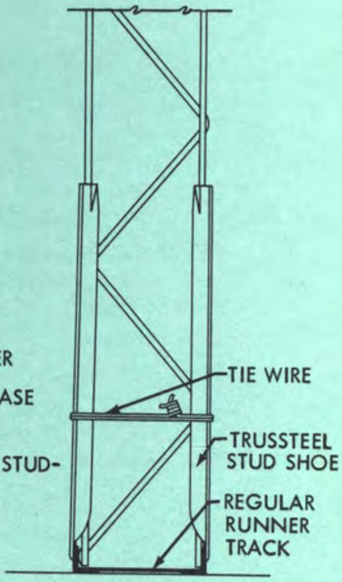
Scale: 3″ = 1′ – 0″



SNAP-IN RUNNER TRACK & STUD

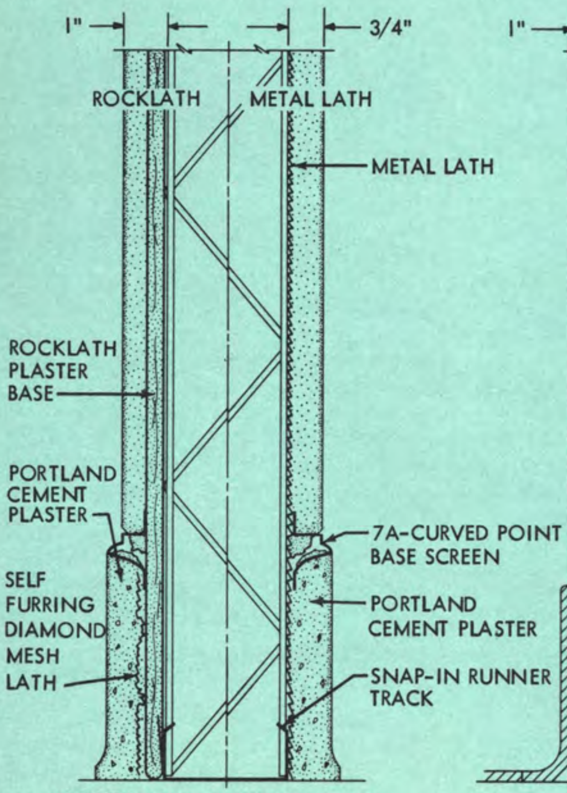


COMBINATION STUD BASE CLIP

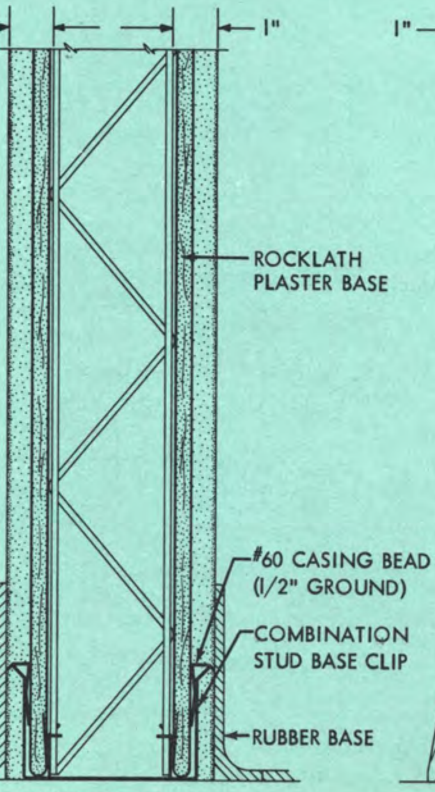


REGULAR RUNNER TRACK AND SHOES

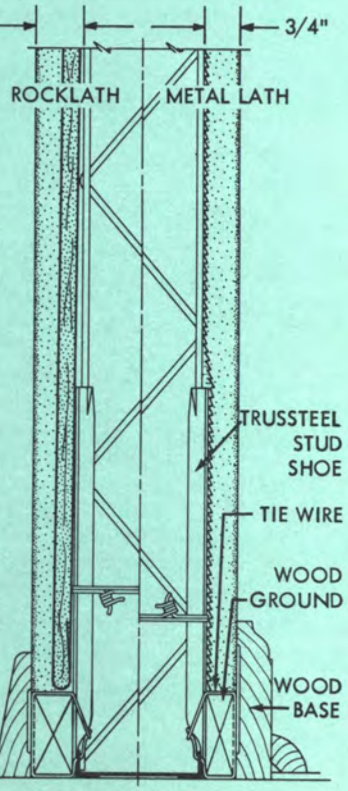
BASE DETAILS



PORTLAND CEMENT BASE



RUBBER BASE



WOOD BASE

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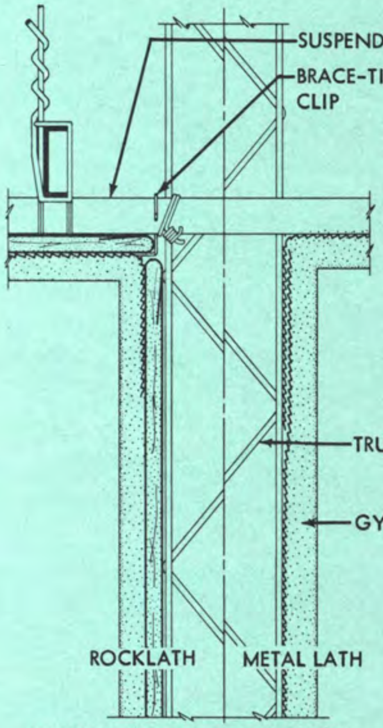
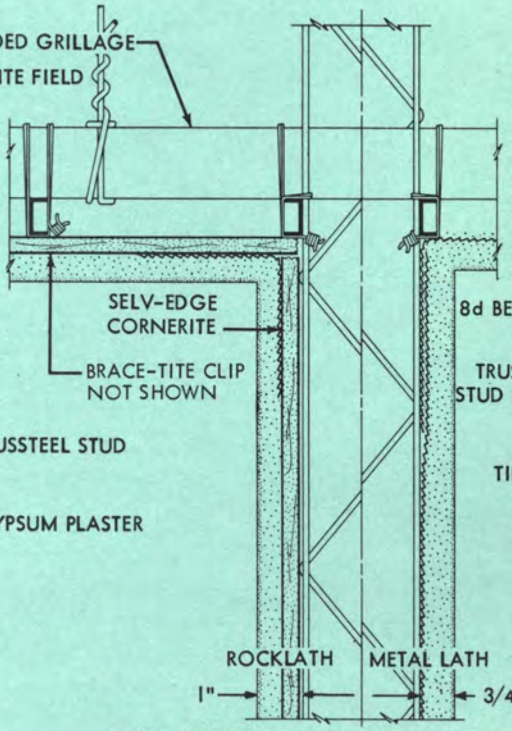
TRUSSTEEL*
STUD SYSTEM DETAILS

CEILING ATTACHMENTS

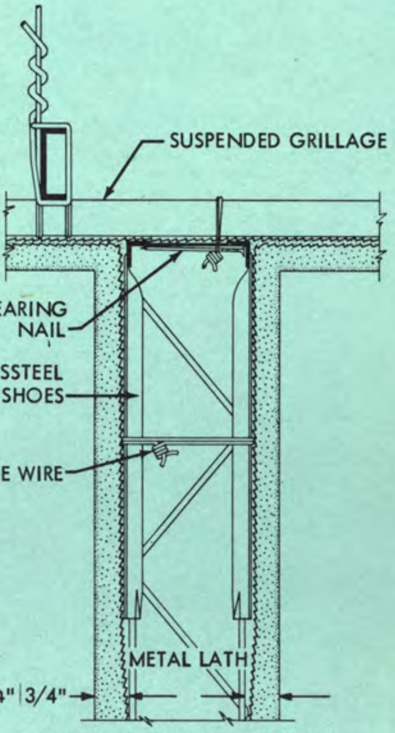
Scale: 3″=1′–0″



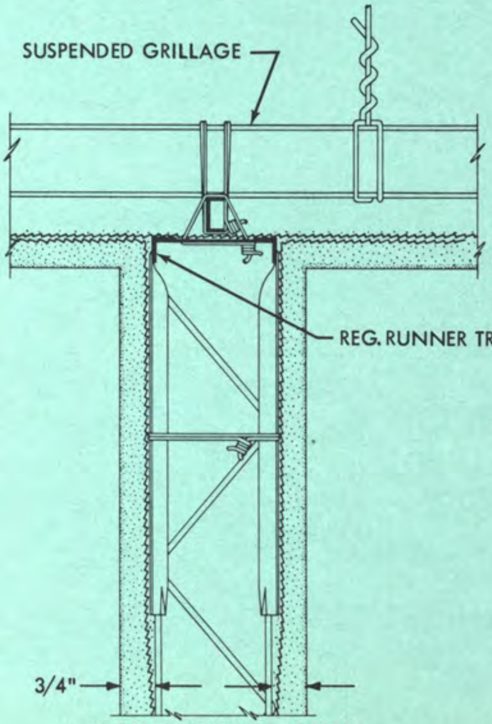
CROSS SECTION TRANSVERSE TO FURRING CHANNEL



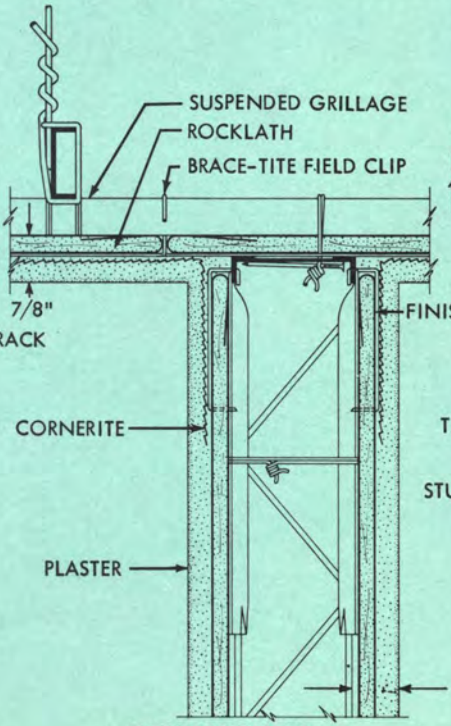
CROSS SECTION PARALLEL TO FURRING CHANNEL



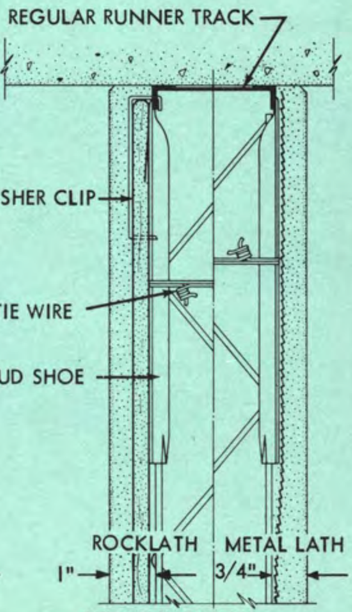
CROSS SECTION TRANSVERSE TO FURRING CHANNEL



CROSS SECTION PARALLEL TO FURRING CHANNEL



ATTACHMENT TO SUSPENDING CEILING



ATTACHMENT TO CONCRETE CEILING SLAB

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*T. M. Reg. U. S. Pat. Off.

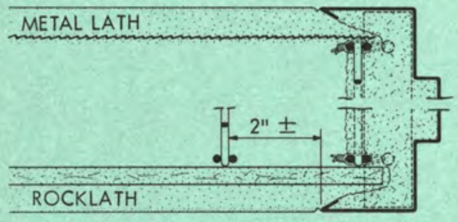
TRUSSTEEL* STUD SYSTEM DETAILS

METAL DOOR FRAMES

Jamb Anchor inserts should be notched according to size of stud and welded in the frame as shown in the detail.

Grouting of the frame, after installation of the jamb stud is recommended in all cases. When heavy or over-sized doors are used (hospitals, etc.) or in instances where extreme abuse is anticipated, door frames must be grouted.

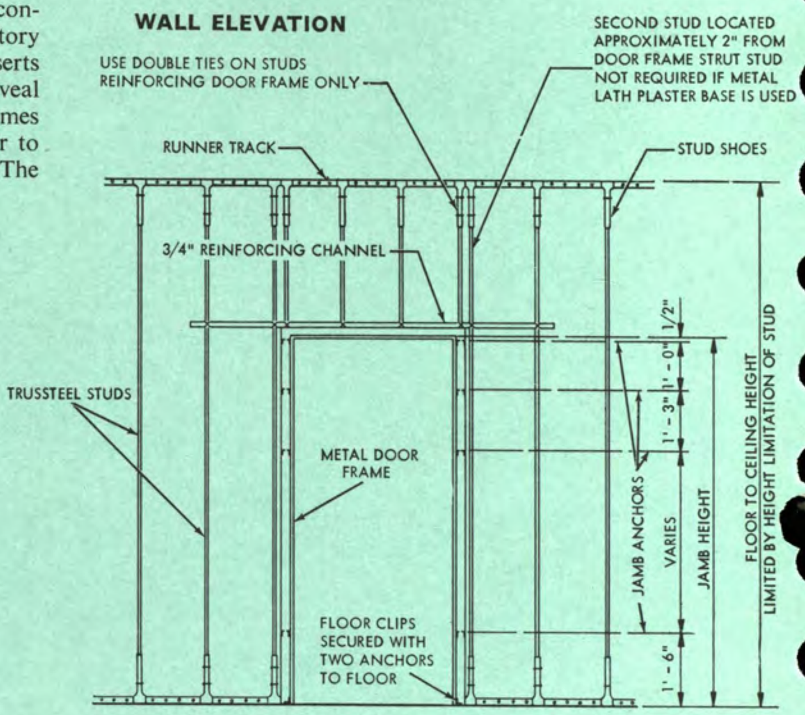
When lightweight hollow flush wood doors are used in conjunction with metal frames, the grouting is not mandatory providing the frame is detailed with the jamb anchor inserts welded to the jamb face and trim returns in the case of reveal type frames, or to flanges, in the case of flush type frames and the frame provides for the lath and basecoat plaster to be inserted into the frame and completely fill the flanges. The plaster should not die against the trim return reveal.



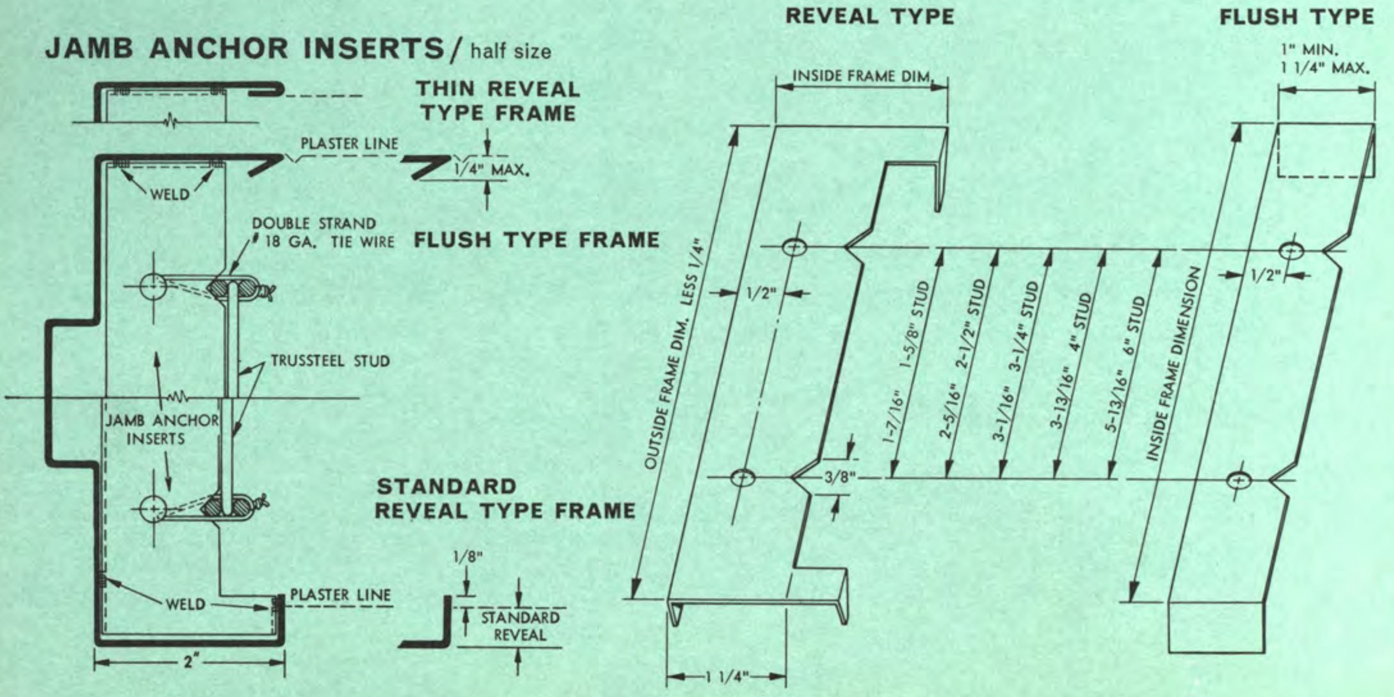
METAL DOOR FRAME / 3" = 1'–0"

showing line of recommended grouting raked out along side of jamb anchor stud to permit lath & plaster to enter frame. If grouting is not specified, lath should carry well into frame and plaster forced beyond flange return.

To prevent frame rotation, it is recommended that the floor clips be welded to the back of jamb face and to the flange returns, or that they be welded between the flanges, and then secured to the floor with two spaced anchors. Anchor insert clips if inverted will serve as floor clips.


WALL ELEVATION
USE DOUBLE TIES ON STUDS REINFORCING DOOR FRAME ONLY
SECOND STUD LOCATED APPROXIMATELY 2" FROM DOOR FRAME STRUT STUD NOT REQUIRED IF METAL LATH PLASTER BASE IS USED
RUNNER TRACK
STUD SHOES
3/4" REINFORCING CHANNEL
TRUSSTEEL STUDS
METAL DOOR FRAME
FLOOR CLIPS SECURED WITH TWO ANCHORS TO FLOOR
1/2"
1' - 0"
1' - 3"
VARIES
1' - 6"
JAMB ANCHORS
JAMB HEIGHT
FLOOR TO CEILING HEIGHT LIMITED BY HEIGHT LIMITATION OF STUD

JAMB ANCHOR INSERTS / half size



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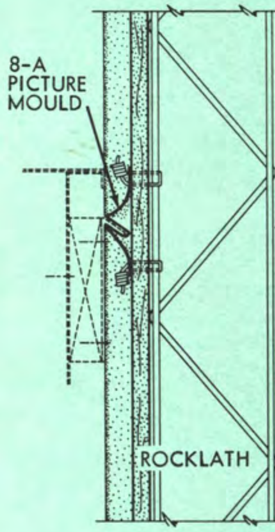
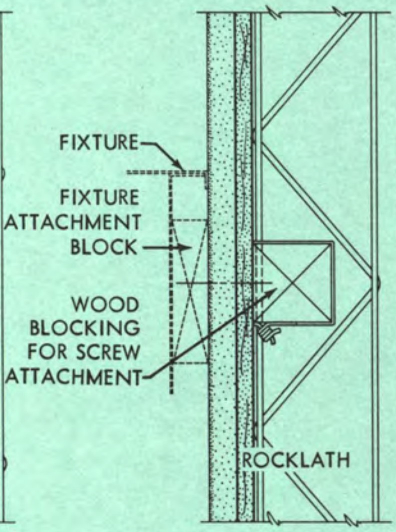
*T.M. Reg. U.S. Pat. Off.

MISCELLANEOUS DETAILS

LIGHT FIXTURE ATTACHMENTS

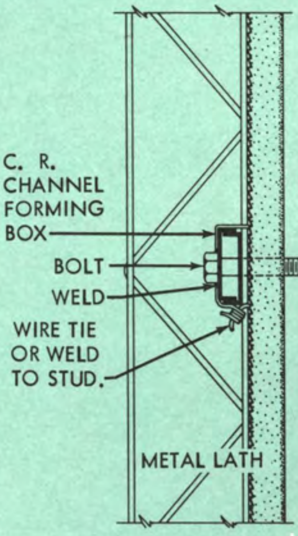


Picture mold supported 300 lbs. hung on 2 supports at 24″ o.c.



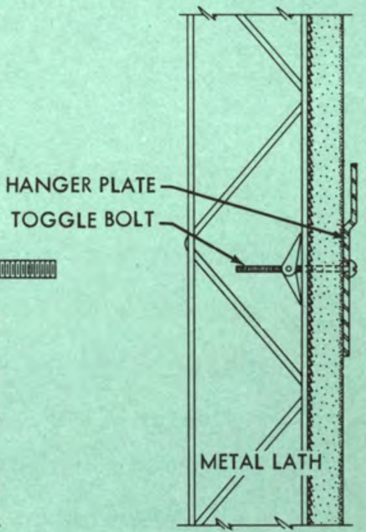
No test data available. Wood attachment blocking should be secured behind the stud channel.

HEAVY FIXTURE ATTACHMENT



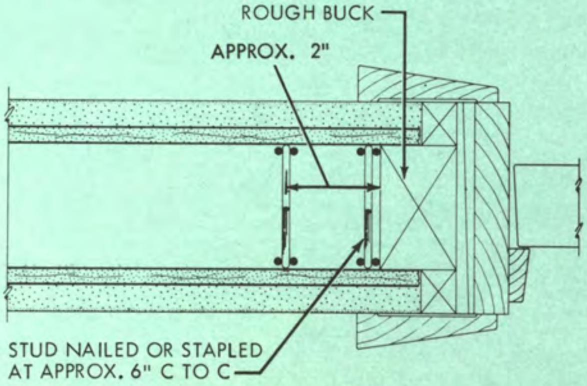
Bracket loaded to 300 lbs. No failure in partition.

LIGHT FIXTURE ATTACHMENT

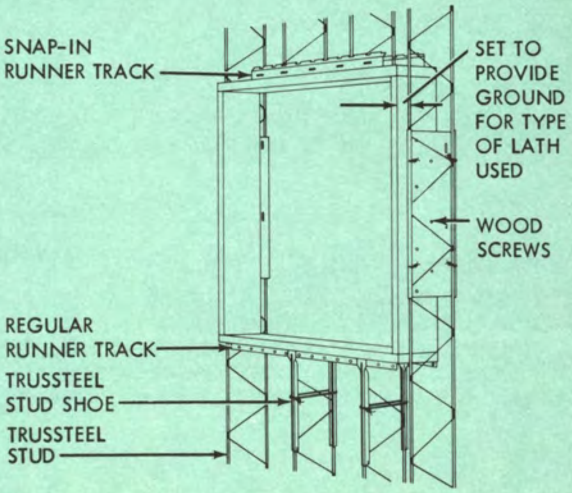


Toggle Bolt attachment carries 150 lbs. in direct pull, 150 lbs. in shear.

WOOD DOOR FRAME



BORROWED LIGHT OR CABINET FRAME



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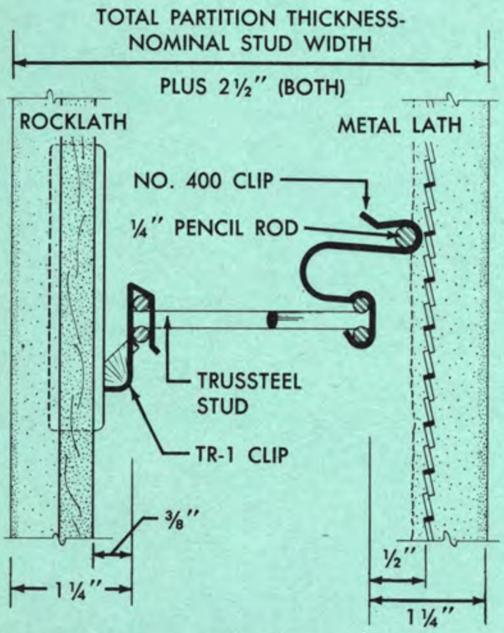
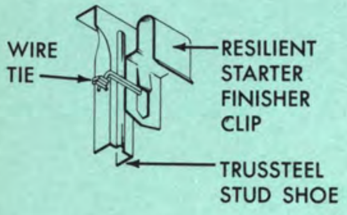
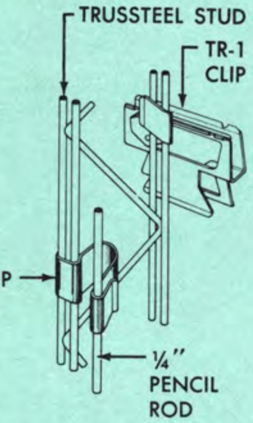
*T. M. Reg. U.S. Pat. Off.

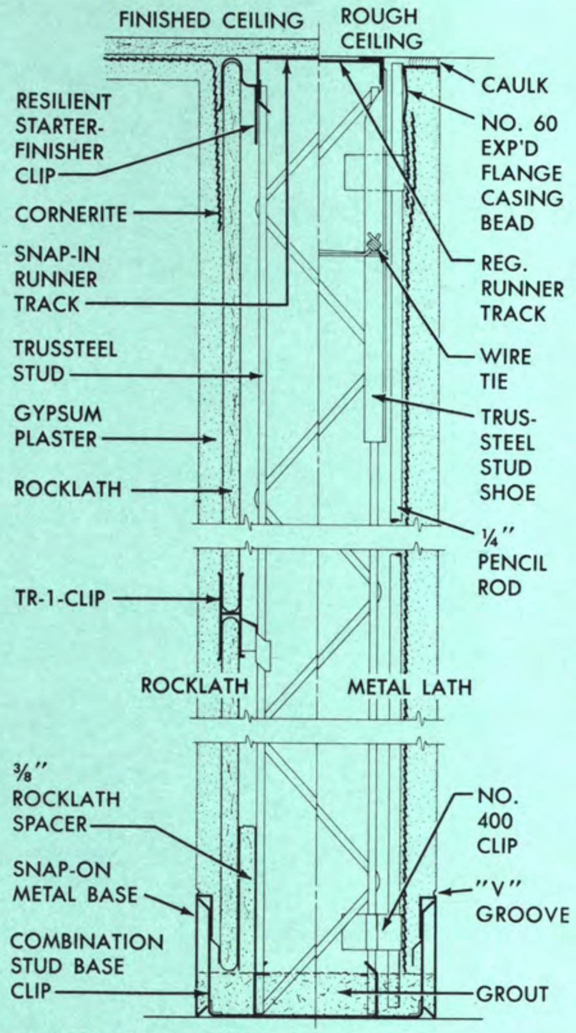
Resilient Attachment of ROCKLATH* Plaster Base & Metal Lath to TRUSSTEEL* Studs.

Resilient attachment of metal lath to Trussteel Studs using #400 Resilient Clips ¼″ pencil rods and wire tying metal lath to pencil rods or resilient attachment of Rocklath to Trussteel Studs using the TR-1 Field Clips and R-SF Starter-Finisher Clips.







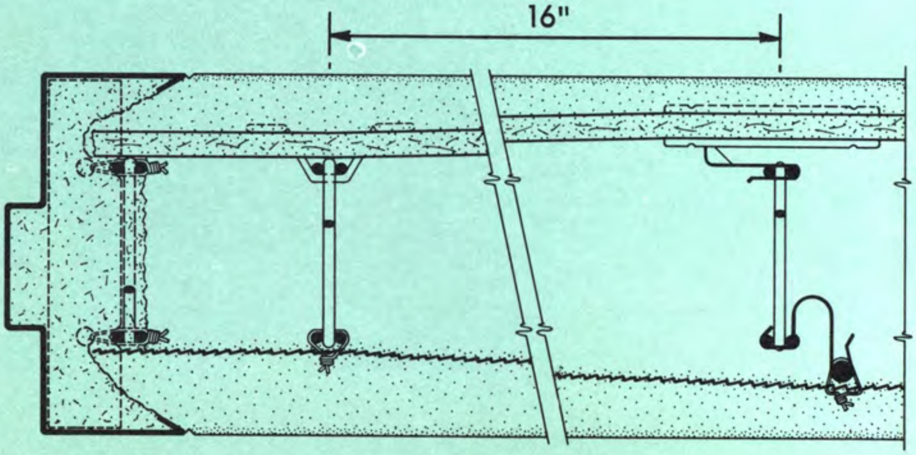


RESILIENT TRUSSTEEL STUD

DOOR FRAME DETAIL

The Resilient Clip is eliminated on the two studs adjacent to the door frame and the lath is warped in which increases the plaster thickness.

Door frame must be grouted.



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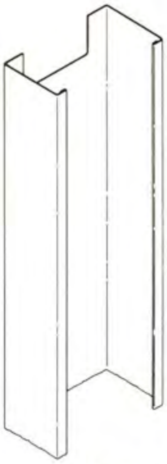
*T.M. Reg. U.S. Pat. Off.

L-P STUD PARTITION

THE POWER DRIVEN, SELF-DRILLING SCREW AFFORDS RAPID, UNIFORM APPLICATION OF PLASTER BASES.

A SCREW DEPTH LOCATOR ASSURES TIGHT ATTACHMENT AND MINIMIZES CORE FRACTURE AND FACE PUNCTURES.



L-P STUD

DESCRIPTION

The L-P Stud is formed from 26 gauge hot dipped galvanized steel. The L-P Stud is fabricated in three widths, 1⅝″, 2½″ and 3⅝″, and in lengths up to 16′-0″. A specially designed, power driven, self-drilling steel screw is used for the attachment of plaster bases to the stud. End joints of ROCKLATH Plaster Base may fall on studs, or between studs when supported by a BRIDJOINT B-1 clip.

FUNCTION AND UTILITY

This "metal lumber" provides a simple, easy to erect, incombustible, non-load bearing partition assembly. The stud construction allows easy vertical chaseways for pipes, conduit and ducts, with some limited horizontal chaseways through the cutouts of the web.

Fire Resistance—All components are incombustible, and a 1 hour fire rating has been obtained using the 2½″ L-P Stud, Perforated ROCKLATH* plaster base and ½″ of sanded plaster.

Sound Isolation—An average sound transmission loss of 46 decibels was obtained on a 2½″ L-P Stud, ROCKLATH and sanded plaster. See technical data pages 14 and 15.

Lightweight—The partition has a dead load of approximately 14 lbs. per sq. ft.

Strength—This partition with studs spaced 24 inches on center provides adequate strength for normal partition usage.

Economical—Low material costs, speed of erection and the versatility of the system provides a cost comparable or lower than wood frame construction.

LIMITATIONS

1. A non-load bearing partition.
2. Limiting heights of the partition must be reduced by 15 percent if a lightweight aggregate basecoat is used.
3. The L-P Stud is not recommended for a partition which is lathed and plastered on one side only.
4. Plaster must be applied by 3-coat method per 1964 AIA File 21-A, USG Gypsum Plasters.
5. The sound transmission loss average 46 decibels, however, the sound classification is 37.

PARTITION THICKNESS (1)

Stud Width	Section Modulus	ROCKLATH and Plaster	Dia. Mesh and Plaster	Maximum Partition Height	
				ROCKLATH	Metal Lath
				Stud 24″o.c.	Stud 24″o.c.
1⅝″	.074	3⅜″	3⅛″	10′-0″	10′-0″
2½″	.096	4¼″	4″	13′-6″	13′-6″
3⅝″	.123	5⅜″	5⅛″	17′-0″	17′-0″

(1) Reduce ceiling height by 15% if Perlite aggregate is used.

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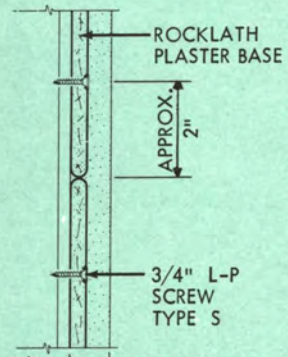
*T. M. Reg. U. S. Pat. Off.

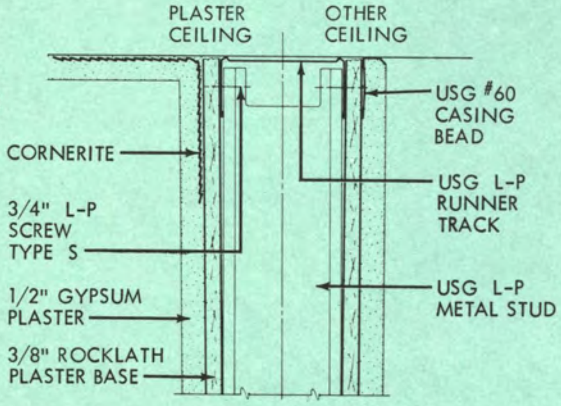
L-P ROCKLATH* PLASTER BASE PARTITION SYSTEM

CEILING ATTACHMENT

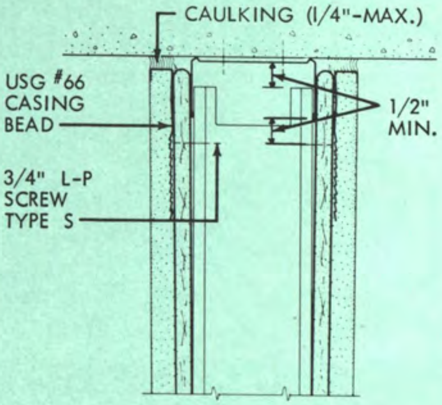
Scale: 3" = 1'-0"



ROCKLATH EDGE JOINT

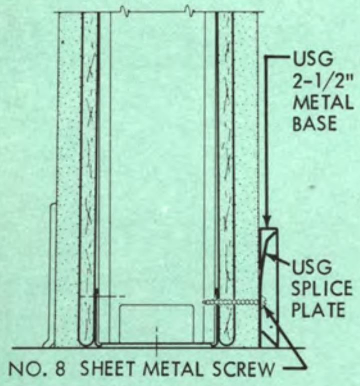


DETAIL AT SUSPENDED CEILING

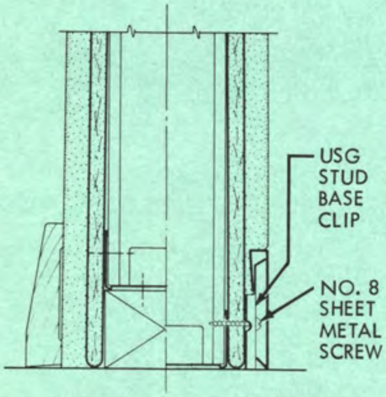


DETAIL AT CONCRETE CEILING SLAB

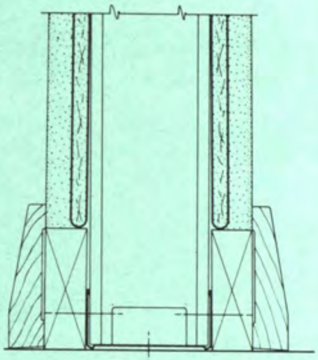
BASE DETAILS



RUBBER **METAL**

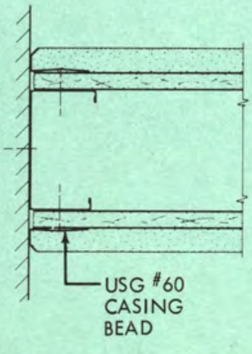


WOOD **METAL**

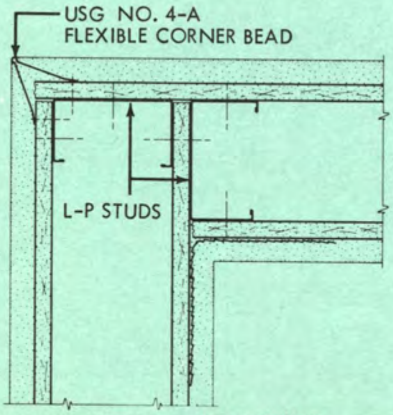


WOOD

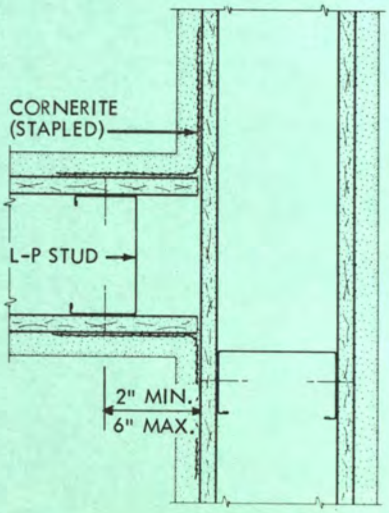
INTERSECTING PARTITIONS Scale: 3" = 1' – 0"



MASONRY WALL



INTERNAL; EXTERNAL CORNER



INTERSECTING L-P STUD, ROCKLATH

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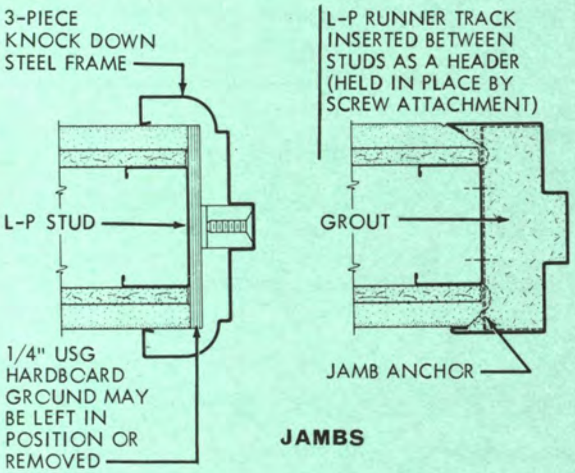
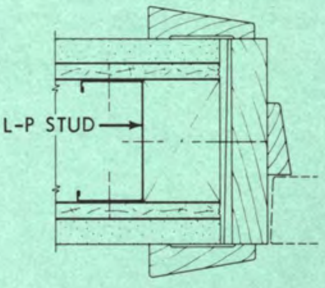
*T. M. Reg. U.S. Pat. Off.

DOOR FRAMES

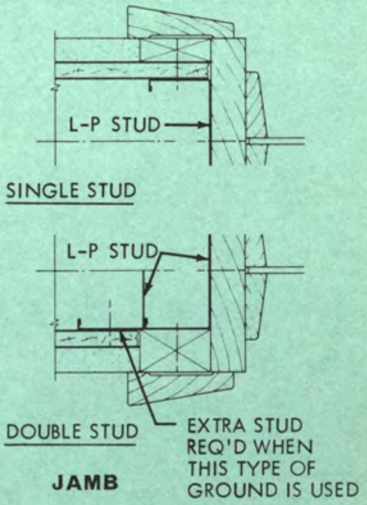
Scale: 3″ = 1′ – 0″


3-PIECE KNOCK DOWN STEEL FRAME
L-P STUD
1/4" USG HARDBOARD GROUND MAY BE LEFT IN POSITION OR REMOVED
L-P RUNNER TRACK INSERTED BETWEEN STUDS AS A HEADER (HELD IN PLACE BY SCREW ATTACHMENT)
GROUT
JAMB ANCHOR

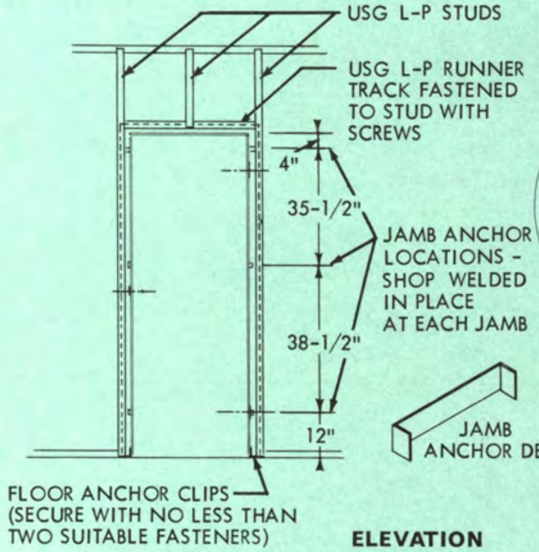
JAMBS



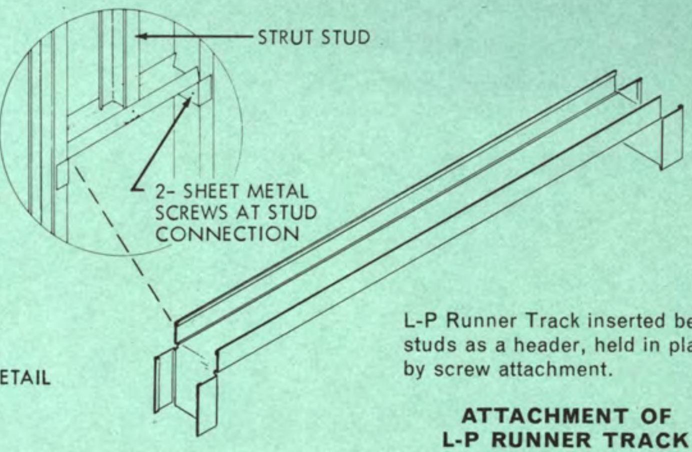
JAMB



JAMB


USG L-P STUDS
USG L-P RUNNER TRACK FASTENED TO STUD WITH SCREWS
4"
35-1/2"
38-1/2"
12"
JAMB ANCHOR LOCATIONS - SHOP WELDED IN PLACE AT EACH JAMB
JAMB ANCHOR DETAIL
FLOOR ANCHOR CLIPS (SECURE WITH NO LESS THAN TWO SUITABLE FASTENERS)

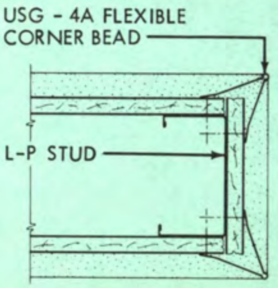
ELEVATION
CROSS SECTION THRU FRAME



L-P Runner Track inserted between studs as a header, held in place by screw attachment.

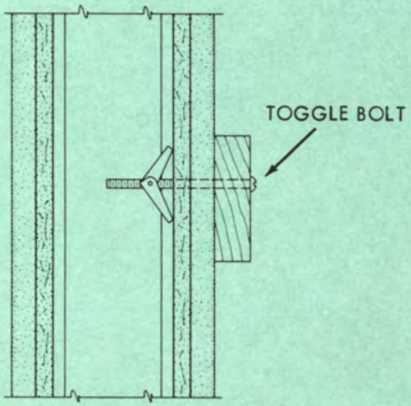
ATTACHMENT OF L-P RUNNER TRACK AS HEADER OR SILL

PARTITION TERMINAL



FIXTURE ATTACHMENT

Scale: 3″ = 1′ – 0″



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*T. M. Reg. U. S. Pat. Off.

UNITED STATES GYPSUM

SOLID PLASTER PARTITIONS

DESCRIPTION

The solid partition is a monolithic plaster construction adaptable to non-load bearing requirements with a minimum thickness of 2 inches. It is flexible in that additional strength, rigidity, and greater fire protection can be gained by increasing the plaster thickness.

There are three types of solid plaster partitions:

Channel Stud—Metal Lath. Requires no bracing.

⅜″ Riblath. Requires temporary bracing.

½″ Long Length ROCKLATH* Core. Requires temporary bracing during plastering operation.

FUNCTION AND UTILITY

Economical

1. The solid plaster partition saves space and costly floor area.
2. The solid plaster partitions are accepted as the most economical fire resistant plaster partition assemblies.
3. In structural design the dead load for 2 inch partitions will vary from 9.5 lbs. to 18 lbs. per sq. ft. depending on the type of lath and plaster aggregate used.

Performance—Nationally accepted and used in schools, apartments and hotels as a functional and economical partition construction. Most major apartment house projects have used these assemblies with low maintenance costs and excellent performance.

Fire-Protection—Constructed of incombustible components, solid plaster partitions constructed as specified have established fire ratings of up to two hours. (See Fire Test Data on pages 12 & 13.)

Strength—Impact tests with a 240 ft. lb. load concentrated at the center of a 2″ x 8′-0″ x 16′-0″ panel failed to produce discernable cracking. Additional strength and rigidity are gained by increasing the partition thickness.

LIMITATIONS OF USE

1. Non-load bearing partitions only.
2. Limiting height is 10′0″ for partitions with ROCKLATH Plaster Base, 12′-0″ for Metal Lath.
3. Steel door frames and metal bases must be grouted with gypsum mortar.
4. Two inch partitions like all other partition constructions should be isolated from reinforced concrete framing columns and beams. The partition will not resist stresses transmitted to it by movement or deflection of the structural components of the building.

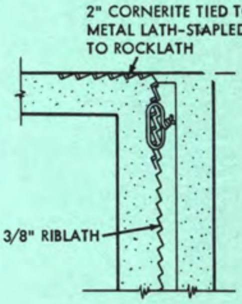
Partition Construction	Thickness	Limiting Ceiling Ht.	Comments
¾″ Cold Rolled Channels Diamond Mesh Lath & Plaster	2″	12′-0″	No limitation on length of this partition for heights under 12′-0″. Length between columns, or walls, shall not be greater than 2 times the partition height when the latter is 12′-0″ or more, nor greater than 1½ times height when the latter exceeds 16′-0″; nor greater than the height when it is 24′-0″ or more. Heights over 20′-0″ shall have horizontal girts every 6′-0″.
¾″ Cold Rolled Channels Diamond Mesh Lath & Plaster	2¼″	14′-0″	
¾″ Cold Rolled Channels Diamond Mesh Lath & Plaster	2½″	16′-0″	
1½″ C. R. Channel Diamond Mesh Lath & Plaster	2¾″	18′-0″	
1½″ C. R. Channel Diamond Mesh Lath & Plaster	3″	20′-0″	
1½″ C. R. Channel Diamond Mesh Lath & Plaster	3½″	22′-0″	
⅜″ Riblath & Plaster	2″	10′-0″	Height of 10′-0″ limitation is based on the length of lath available.
½″ Long Length ROCKLATH and Plaster	2″	10′-0″	Limiting height of partition without bracing the girt 8′-6″.

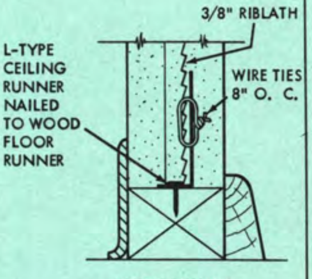
*T. M. Reg. U. S. Pat. Off.

SOLID METAL LATH PARTITIONS

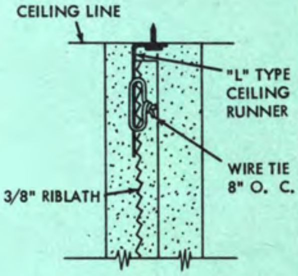
Scale: 3″=1′-0″

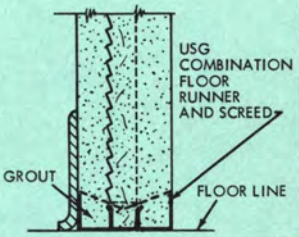
⅜″ RIBLATH-PLASTER



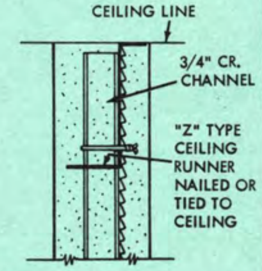


WOOD RUNNER

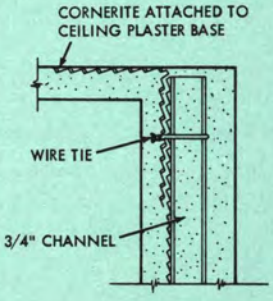


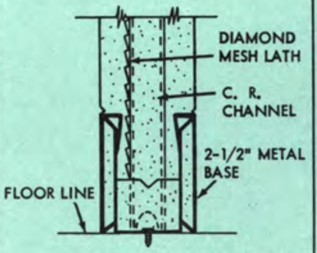


CHANNEL STUD-PLASTER

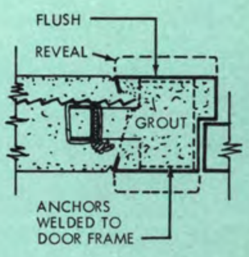


DIAMOND MESH LATH





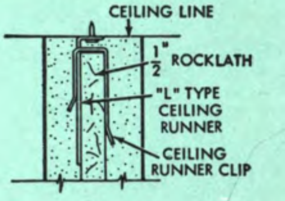
DOUBLE BASE CLIP



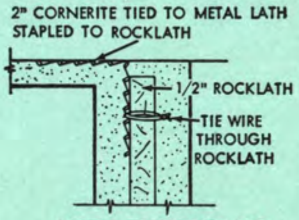
METAL DOOR FRAME

2″ SOLID PARTITION—½″ long length ROCKLATH* PLASTER BASE & PLASTER

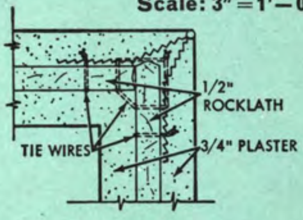
Scale: 3″=1′—0″



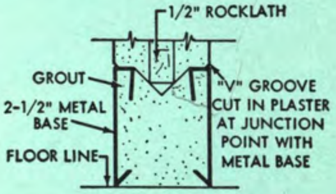
CEILING ATTACHMENT "L" RUNNER & CLIP


2" CORNERITE TIED TO METAL LATH STAPLED TO ROCKLATH
1/2" ROCKLATH
TIE WIRE THROUGH ROCKLATH

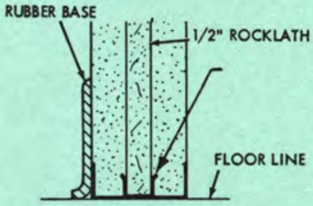
ATTACHMENT TO LATHED CEILING



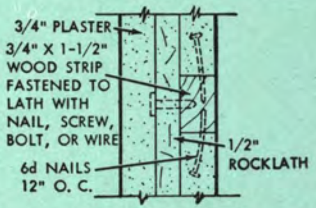
PARTITION CORNER



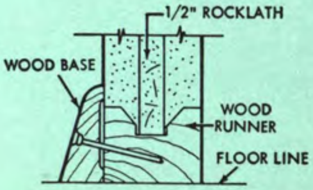
2½″ METAL BASE



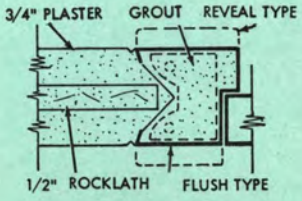
FLOOR RUNNER & SCREED


3/4" PLASTER
3/4" X 1-1/2" WOOD STRIP FASTENED TO LATH WITH NAIL, SCREW, BOLT, OR WIRE
6d NAILS 12" O. C.
1/2" ROCKLATH

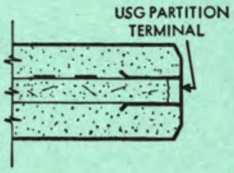
CABINET FIXTURE ATTACHMENT



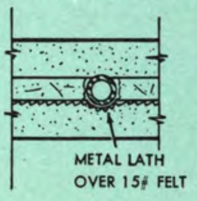
WOOD FLOOR RUNNER



METAL DOOR FRAME



METAL PARTITION END



RIGID CONDUIT

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*T. M. Reg. U. S. Pat. Off.

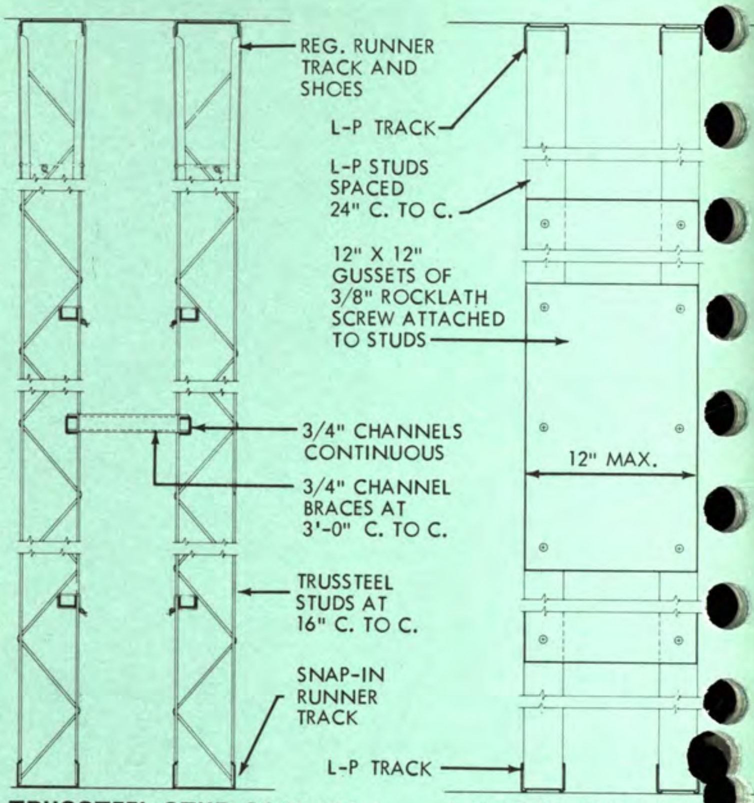
CORE WALL

DESCRIPTION

Core walls, as vertical shafts encasing the usual plumbing supply and waste lines, vent ducts and electrical conduits, require more free space than can be provided within the usual partition assembly.

Core walls are easily constructed using the elements of partitions, providing they are properly braced to compensate for the stress skin action of the one side. For example:

1. TRUSSTEEL* Studs may be used as a core wall by bracing the non lathed side of the studs with ¾″ continuous channel girts at the third points and tying the mid-grits together at 30″ on center with a ¾″ channel bracket.
2. L-P Stud core wall may be formed of two L-P Studs bracketed together using 12″ x 12″ gussets of ⅜″ ROCKLATH* plaster base. Gussets spaced not to exceed 36″ on center. Gussets securely attached to L-P Studs using three ¾″ L-P Screws. Limiting ceiling ht. 10′-0″.
3. Channel Stud Core Walls as detailed below.


REG. RUNNER TRACK AND SHOES
L-P TRACK
L-P STUDS SPACED 24" C. TO C.
12" X 12" GUSSETS OF 3/8" ROCKLATH SCREW ATTACHED TO STUDS
3/4" CHANNELS CONTINUOUS
12" MAX.
3/4" CHANNEL BRACES AT 3'-0" C. TO C.
TRUSSTEEL STUDS AT 16" C. TO C.
SNAP-IN RUNNER TRACK
L-P TRACK

TRUSSTEEL STUD CORE WALL

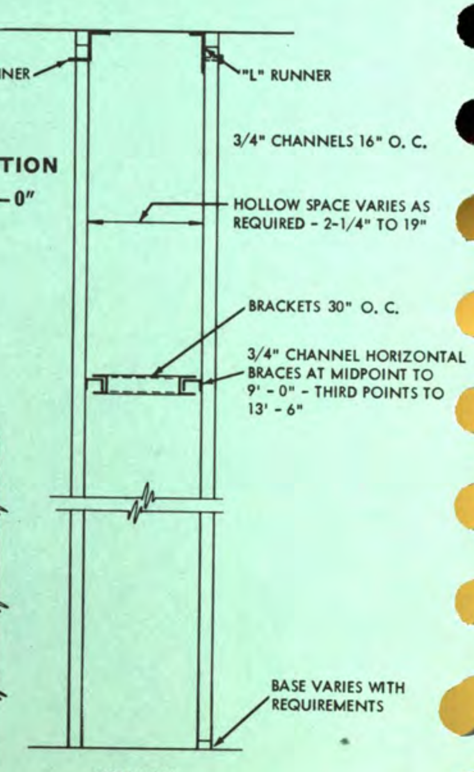
L-P STUD CORE WAL

CHANNEL STUD PARTITIONS (CORE WALLS)

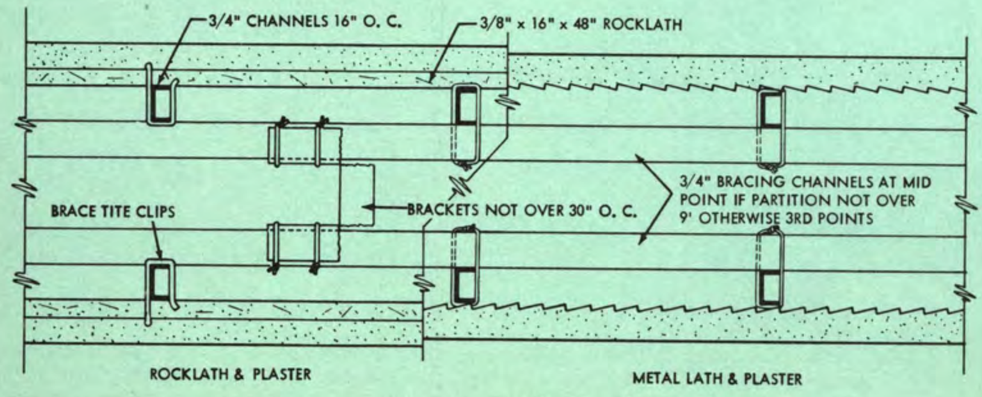
DETAILS / Scale as noted

The *channel stud partition*, frequently used as a core wall, is a versatile partition construction which provides almost unlimited space for mechanical installations within the partition. They consist of channel studs and either ⅜″ x 16″ x 48″ ROCKLATH or metal lath plaster bases, and may be designed to provide variable core widths.

VERTICAL SECTION
Scale: 1½″ = 1′—0″


"Z" RUNNER
"L" RUNNER
3/4" CHANNELS 16" O. C.
HOLLOW SPACE VARIES AS REQUIRED - 2-1/4" TO 19"
BRACKETS 30" O. C.
3/4" CHANNEL HORIZONTAL BRACES AT MIDPOINT TO 9' - 0" - THIRD POINTS TO 13' - 6"
BASE VARIES WITH REQUIREMENTS
CORE WALL

HORIZONTAL SECTION Scale: 3″ = 1′—0″


3/4" CHANNELS 16" O. C.
3/8" x 16" x 48" ROCKLATH
3/4" BRACING CHANNELS AT MID POINT IF PARTITION NOT OVER 9' OTHERWISE 3RD POINTS
BRACE TITE CLIPS
BRACKETS NOT OVER 30" O. C.
ROCKLATH & PLASTER
METAL LATH & PLASTER

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*T. M. Reg. U. S. Pat. Off.

WALL FURRING SYSTEMS

EXTERIOR WALL FURRING

DESCRIPTION

It is our recommendation that all exterior masonry walls be furred. Asphaltic or Bituminous bonding agents are not recommended as a plaster base. Several systems are offered, each providing structural and economic advantages for special furring conditions.

FUNCTION AND UTILITY

Properly designed wall furring systems should provide:

1. Condensation control
2. Protection from moisture seepage
3. Insulation and vapor barrier (Insulating ROCKLATH* Plaster Base)
4. A degree of isolation from structural movement. Exterior walls are subjected constantly to changing dimensions due to temperature changes and wind loads.

LIMITATIONS

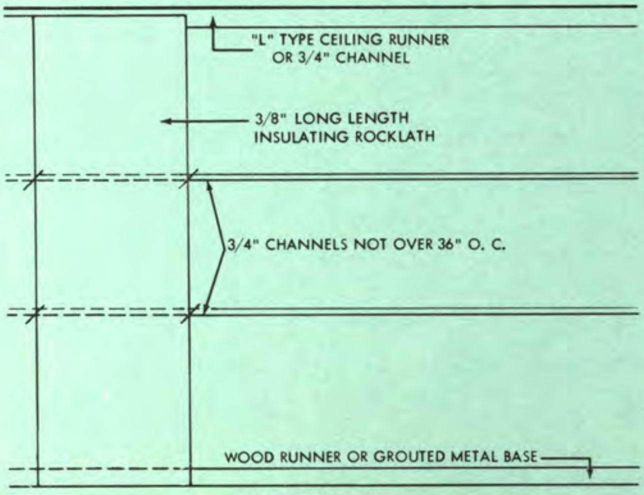
Long length Insulating ROCKLATH wall furring is not economical for cut-up wall areas containing a large percentage of openings.

Wood furring strips anchored directly to an exterior wall provide the least relief from structural movement.

Limiting height of Long Length Insulating ROCKLATH Furring System is 12′0″.

LONG LENGTH INSULATING ROCKLATH FURRING

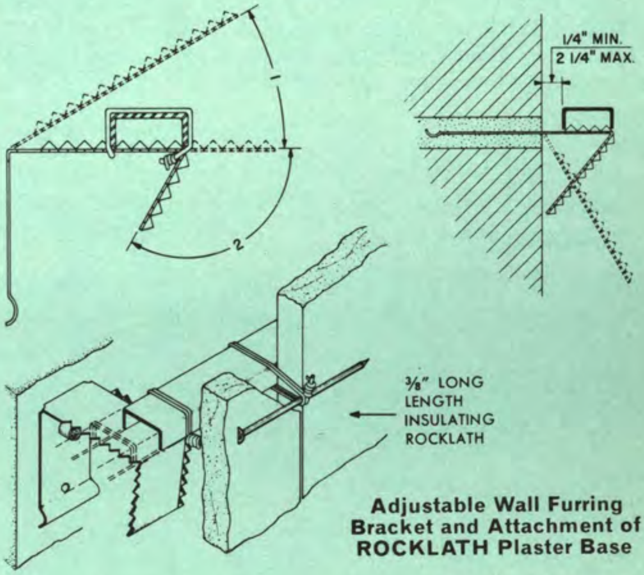
In this system, USG Adjustable Wall Furring Brackets, spaced not more than 36″ o.c., properly secured to the exterior wall, provide the support for ¾″ channels placed 36″ o.c. horizontally. Long Length Insulating ROCKLATH is attached to the channels by wire ties, and plaster is applied to ¾″ grounds. Regular 16″ x 48″ ROCKLATH may also be used, attached with BRACE-TITE* Clips. See Details for recommended floor and ceiling attachment. Height limitation for this system is 12′0″, unless special details are incorporated.


"L" TYPE CEILING RUNNER OR 3/4" CHANNEL
3/8" LONG LENGTH INSULATING ROCKLATH
3/4" CHANNELS NOT OVER 36" O. C.
WOOD RUNNER OR GROUTED METAL BASE

Wall Elevation

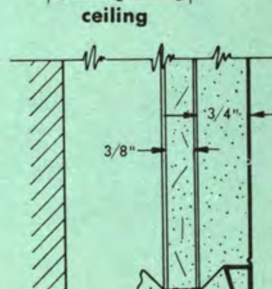
ADJUSTABLE WALL FURRING BRACKETS

1. Wall furring brackets shall be attached not more than 36″ o.c. horizontally and vertically.
2. After attachment, bend bracket to horizontal position.
3. Wire tie plumbed channel to bracket ¼″ min. from wall.
4. Bend excess of bracket down.

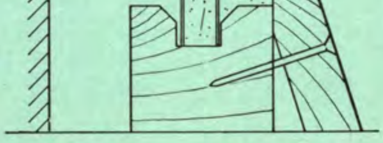


Adjustable Wall Furring Bracket and Attachment of ROCKLATH Plaster Base

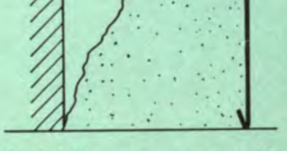
Scale:
Elevation: ½″ = 1′ – 0″
Details: No Scale



ceiling



Wood Runner & Wood Base Long Length ROCKLATH & Plaster



Metal Base—Long Length ROCKLATH & Plaster

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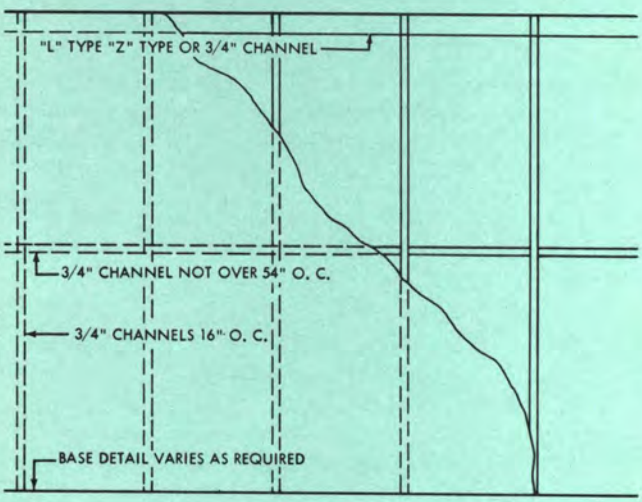
*T. M. Reg. U. S. Pat. Off.

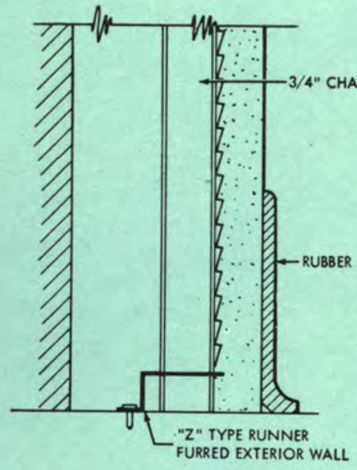
VERTICAL FURRING for Metal Lath

This construction consists of three horizontal ¾″ channels, located not more than 6″ from the floor and ceiling, and one at the midpoint between floor and ceiling, attached to the wall with USG Adjustable Wall Furring Brackets not more than 36″ o.c. Vertical channels are wire tied to these horizontal members, with spacing determined by the maximum allowable spacing of supports for the type of metal lath used. (See Technical Data page 16.) Metal lath is wire tied on the vertical channels and plastered to ¾″ grounds. If height exceeds 10′0″ using ¾″ channels, additional horizontal channels are required, spaced not more than 4′6″ o.c.

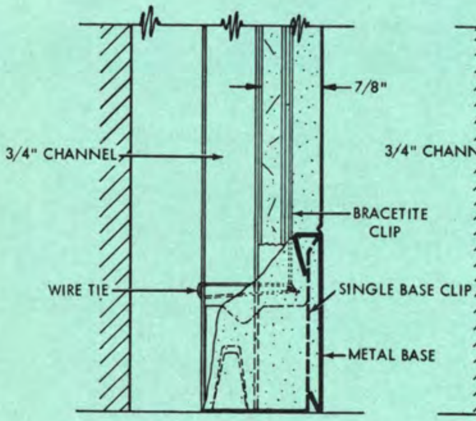
Scale:
Elevation: ½″ = 1′ – 0″
Details: No Scale


"L" TYPE "Z" TYPE OR 3/4" CHANNEL
3/4" CHANNEL NOT OVER 54" O. C.
3/4" CHANNELS 16" O. C.
BASE DETAIL VARIES AS REQUIRED

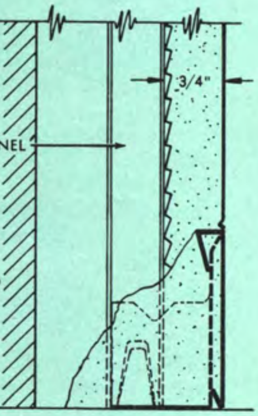
wall elevation



rubber base



ROCKLATH & plaster



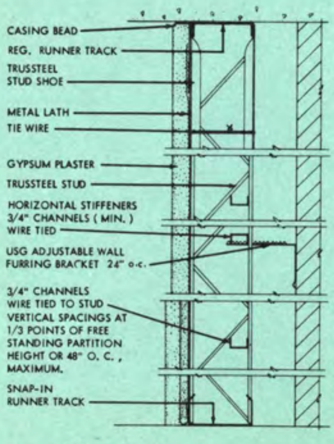
metal lath & plaster

VERTICAL FURRING with TRUSSTEEL* Studs

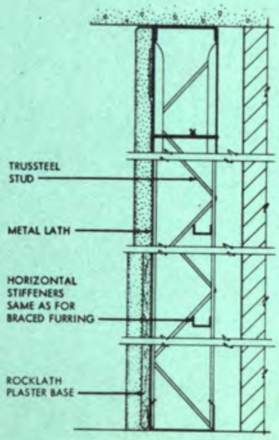
TRUSSTEEL Studs may be used in lieu of horizontal and vertical channels for exterior wall furring.

TRUSSTEEL Stud Size	MAXIMUM HEIGHT(1)	
	Braced Furring	Free Standing Furring
1⅝″	9′	6′
2½″	15′	10′
3¼″	21′	14′
4″	22′	15′
6″	26′	17′

(1) Based on 16″ spacing between studs.


CASING BEAD
REG. RUNNER TRACK
TRUSSTEEL STUD SHOE
METAL LATH
TIE WIRE
GYPSUM PLASTER
TRUSSTEEL STUD
HORIZONTAL STIFFENERS 3/4" CHANNELS (MIN.) WIRE TIED
USG ADJUSTABLE WALL FURRING BRACKET 24" o.c.
3/4" CHANNELS WIRE TIED TO STUD VERTICAL SPACINGS AT 1/3 POINTS OF FREE STANDING PARTITION HEIGHT OR 48" O. C., MAXIMUM.
SNAP-IN RUNNER TRACK

BRACED FURRING



FREE STANDING FURRING

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*T.M. Reg. U.S. Pat. Off.

RESILIENT LATHING SYSTEMS

DESCRIPTION

Resilient lathing systems utilize specially designed clips to connect the lath and framing members, which allow for a degree of independent movement between the plaster membrane and the structure.

FUNCTION AND UTILITY

Fire-Protection—The component parts are incombustible. The gypsum, in addition, calcines slowly, retarding flame and resisting heat transfer by giving up its chemically combined water of crystallization.

Sound Insulation—Resilient attachment provides a marked reduction in the transfer of air-borne sound through the construction by virtue of the damping action of resilient clips, (see Sound Transmission Loss Data pages 13 & 14.)

Crack Resistance—Resilient clip attachment markedly reduces the possible transmission of stresses due to structural movement to the lath and plaster membrane, thereby reducing the incidence of cracking.

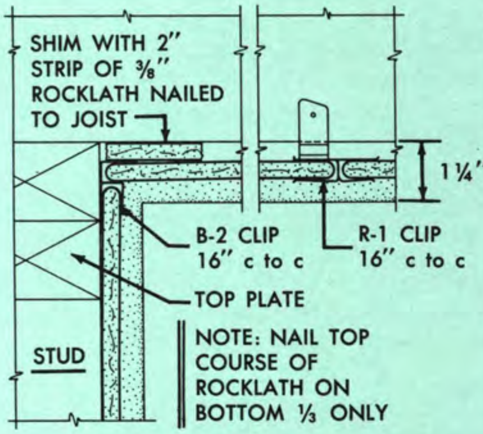
Economy—The cost of resilient clips is small compared to the cost of alternate methods of achieving the desired sound isolation and crack-resistant characteristics. Increasing the mass of systems, or the use of staggered studs in partitions, are costly methods of improving sound transmission loss characteristics, and usually do not provide the additional crack-resistance of resilient clips.

LIMITATIONS OF USE

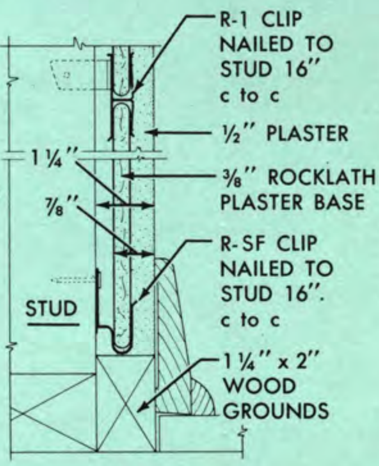
Three coat plastering is required on resiliently attached ROCKLATH ceilings. Perforated ROCKLATH is not recommended for resilient attachment.

Resilient ROCKLATH* Plaster Base Attachment Systems

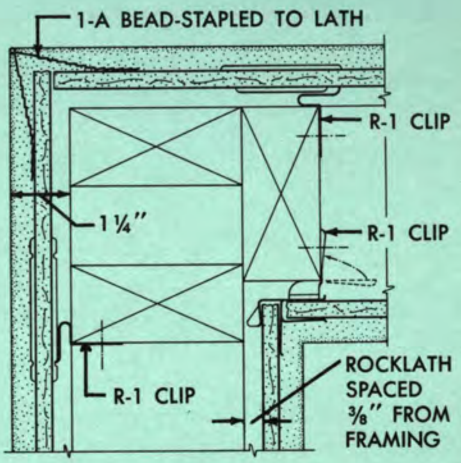
Resilient attachment of ROCKLATH to wood framing, using R-1 and R-2 Resilient Clips, and B-1 BRIDJOINT* Clips.


SHIM WITH 2" STRIP OF 3/8" ROCKLATH NAILED TO JOIST
1 1/4"
B-2 CLIP 16" c to c
R-1 CLIP 16" c to c
TOP PLATE
STUD
NOTE: NAIL TOP COURSE OF ROCKLATH ON BOTTOM 1/3 ONLY

CEILING


R-1 CLIP NAILED TO STUD 16" c to c
1/2" PLASTER
1 1/4"
3/8" ROCKLATH PLASTER BASE
7/8"
R-SF CLIP NAILED TO STUD 16". c to c
STUD
1 1/4" x 2" WOOD GROUNDS

BASE

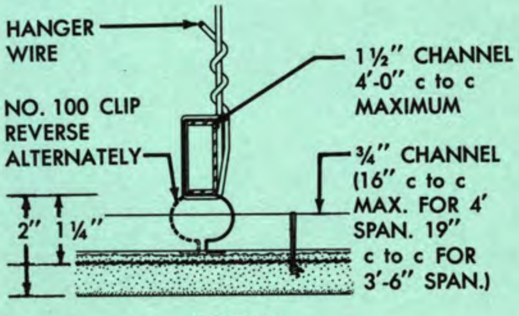


CORNER

RESILIENT METAL LATH ATTACHMENT

Resilient attachment of ¾" channel cross furring to 1½" channel main runners in furred or suspended ceiling construction, using #100 Resilient Clips.

Note: For Resilient TRUSSTEEL Stud Partition. See page 27. For Resilient PYROBAR Partition. See page 19.


HANGER WIRE
1½" CHANNEL 4'-0" c to c MAXIMUM
NO. 100 CLIP REVERSE ALTERNATELY
¾" CHANNEL (16" c to c MAX. FOR 4' SPAN. 19" c to c FOR 3'-6" SPAN.)
2"
1¼"

CEILING

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*T. M. Reg. U. S. Pat. Off.

SUSPENDED CEILINGS

DESCRIPTION

Suspended ceilings consist of three basic elements:

1. Light channel grillage, properly supported, rigid and of sufficient strength to carry to dead load without deflection.
2. A lath plaster base securely attached to the grillage on which the plaster may be applied.
3. The plaster consisting of the basecoat and finish coat.

FUNCTION AND UTILITY

Fire-Protection—Constructed of incombustible component parts, it is possible to design for established fire resistance ratings of one to four hours by varying grillage spacing, type of lath and attachment, type of aggregate, proportioning of gypsum plaster, and plaster thickness.

Economy—Lightweight. The established fire ratings can reduce annual insurance premiums.

Utility—The fireproof membrane serves to conceal structural and mechanical elements, and provides the base for final decoration.

Insulation and Vapor Barrier—Where insulation and vapor barriers are desired, use of insulating (foil back) ROCKLATH* plaster base will provide an effective vapor barrier and increase the overall "U" factor of the roof-ceiling assembly.

Perforated ROCKLATH—Diagonal Reinforcing

LIMITATIONS

1. Main runners and cross furring members should not be let into masonry walls or partitions, and clearance of at least 1″ must be provided at each end of the channels.
2. All recommended spacings of hanger wires and channels are maximum and should not be exceeded.
3. BRACE-TITE Field Clips are designed for use with standard ¾″ cold rolled channels having ½″ legs (Minimum).
4. Use three coat plastering method when machine application is used over Perforated ROCKLATH.
5. In ceiling constructions the following precautions are necessary for good performance:
   a. Isolate the ceiling from exterior walls, columns and interior partitions or other vertical penetrations.
   b. Break the continuity of grillage, lath and plaster where large ceiling expanses occur by control joints or other means. The maximum recommended area within control joints is 2400 square feet, with joints spaced no more than 60 feet apart in either direction.
   c. Where contact, furred or suspended ceilings occur under roof construction, the plenum should be vented according to recommended engineering practice.
   d. The grillage recommendations are for support of the lath and plaster dead loads and are not designed to support concentrated loads of mechanical equipment or workmen, particularly after the plaster has been applied. Independently supported cat walks and equipment platforms should be provided.

BRACE-TITE* Lathing System

DESCRIPTIONS:

BRACE-TITE Lathing System is a method of attaching ROCKLATH Plaster Base to conventional suspended ceiling grillage.

ADVANTAGES:

Structural—The rigid ROCKLATH provides a bracing diaphragm.

Crack-Resistant—The BRACE-TITE Clips while supporting the plaster base firmly against the channels, isolate the plaster membrane from minor movements of the grillage.

Fire-Ratings

1 hour—Channels 16″ on center, Perforated ROCKLATH, ⅝″ perlite plaster

2 hour—Channels 16″ on center, Perforated ROCKLATH, 14 gauge diagonal wire, ½″ perlite plaster

3 hour—Channels 12″ on center, Perforated ROCKLATH, 14 gauge diagonal wire, ½″ perlite plaster

4 hour—Channels 12″ on center, Perforated ROCKLATH, BRACE-TITE and BRIDJOINT clips, 20-gauge galvanized 1″ hexagonal wire mesh, 1″ perlite plaster.

Economical—Saves scratch coat of plaster and labor of application.

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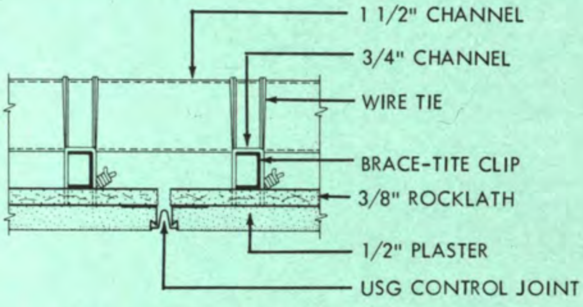
*T. M. Reg. U. S. Pat. Off.

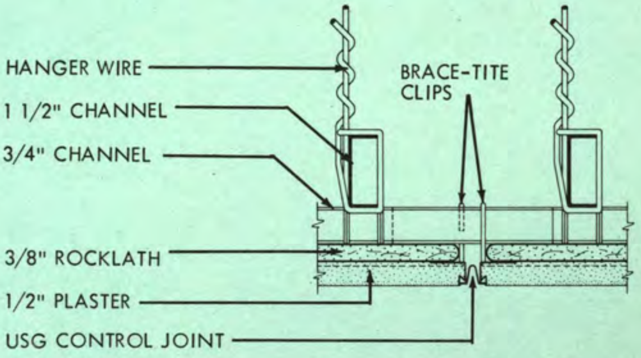
SUSPENDED CEILING DETAILS for ROCKLATH* Plaster Base or Metal Lath

Scale: 3″=1′–0″

ROCKLATH—BRACE-TITE* Attachment

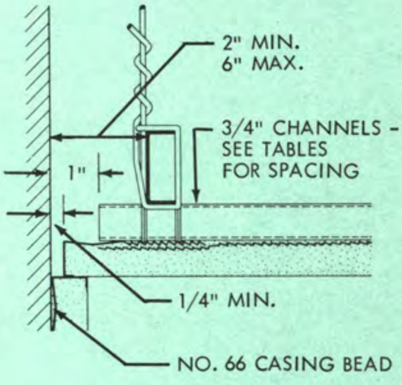


CONTROL JOINT parallel to ¾″ channels

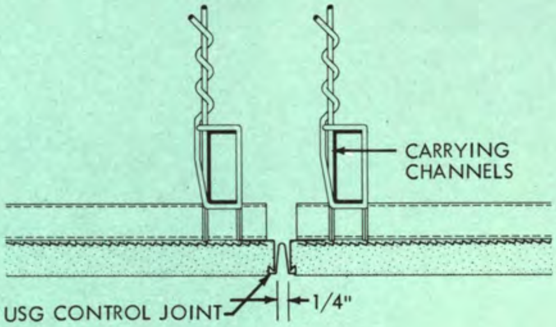


CONTROL JOINT perpendicular to ¾″ channels

METAL LATH ATTACHMENT

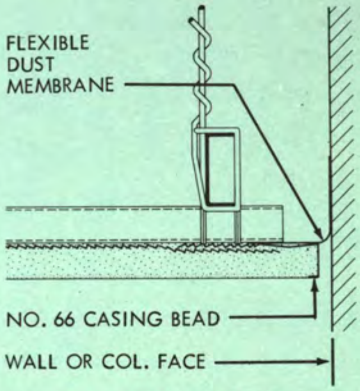


PERIMETER ISOLATION



FOR CEILINGS EXCEEDING 2,400 SQ. FT. AREA

CONTROL JOINT



ISOLATION FROM WALLS OR COLUMNS

STEEL BEAM AND COLUMN FIREPROOFING

DESCRIPTION

Membrane fireproofing of gypsum plasters provides lightweight, thin, compact fire-protection and finished surfaces for structural framing members. The protection afforded in hours of fire resistance depends on the type of base, its method of attachment and spacing, proportioning of aggregate to gypsum plaster and plaster thickness. See pages 41 and 42.

FUNCTION AND UTILITY

Fire-Protection—The component parts are incombustible. The gypsum, in addition, calcines slowly, retarding flame and resisting heat transfer by giving up its chemically combined water of crystallization. The aggregate acts only as a bulking agent for the plaster and some types, as an insulating material against heat transfer. For example, lightweight aggregates provide more fire resistance than sand.

Economy—The thin lightweight plaster assembly reduces the dead load and lost floor area. The plaster surface provides the base for final decoration. Increased fire-protection permits lower insurance premiums.

LIMITATIONS OF USE

To resist impact, provide adequate protection at column corners subject to damage from cartage equipment, etc.

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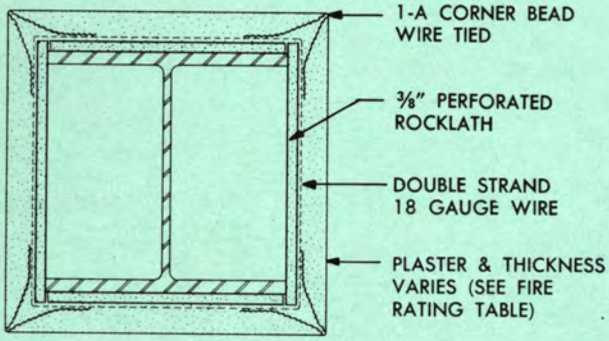
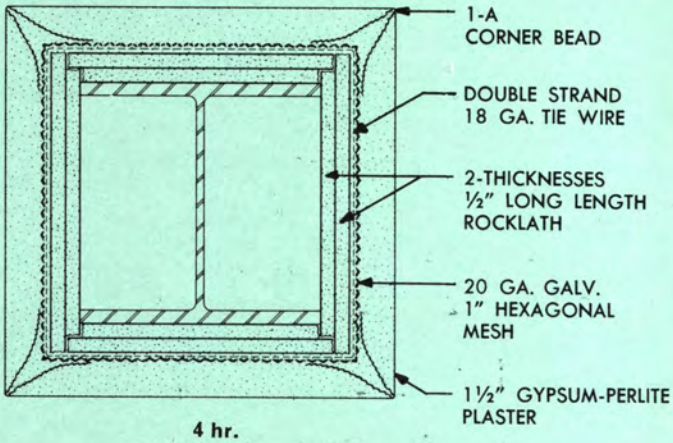
*T. M. Reg. U. S. Pat. Off.

STEEL BEAM AND COLUMN FIREPROOFING

COLUMN FIREPROOFING ROCKLATH* Plaster Base

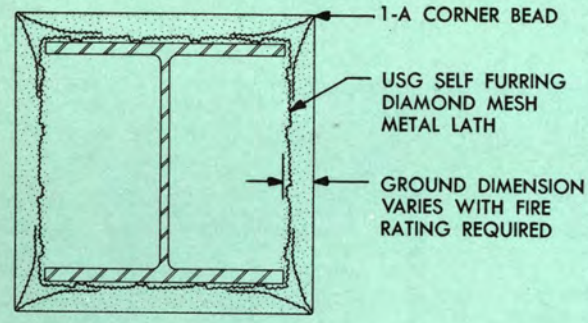

1-A CORNER BEAD WIRE TIED
⅜" PERFORATED ROCKLATH
DOUBLE STRAND 18 GAUGE WIRE
PLASTER & THICKNESS VARIES (SEE FIRE RATING TABLE)

1, 1½, 2 & 3 hr.

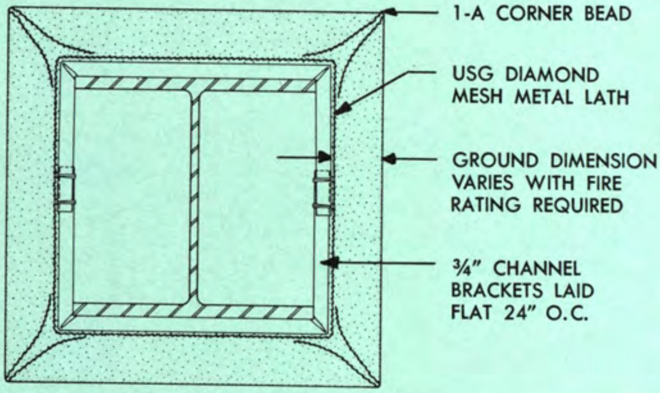

1-A CORNER BEAD
DOUBLE STRAND 18 GA. TIE WIRE
2-THICKNESSES ½" LONG LENGTH ROCKLATH
20 GA. GALV. 1" HEXAGONAL MESH
1½" GYPSUM-PERLITE PLASTER

4 hr.

COLUMN FIREPROOFING Metal Lath

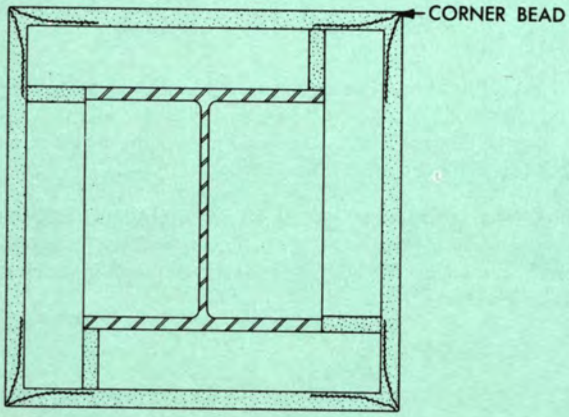

1-A CORNER BEAD
USG SELF FURRING DIAMOND MESH METAL LATH
GROUND DIMENSION VARIES WITH FIRE RATING REQUIRED

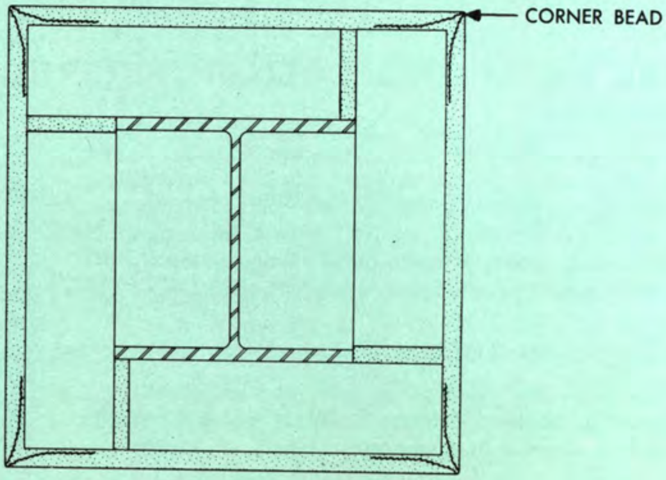
1-2-3-4 hour
COLUMN FURRING


1-A CORNER BEAD
USG DIAMOND MESH METAL LATH
GROUND DIMENSION VARIES WITH FIRE RATING REQUIRED
¾" CHANNEL BRACKETS LAID FLAT 24" O.C.

4 hr. (ALT. METHOD)

COLUMN FIREPROOFING PYROBAR* Tile





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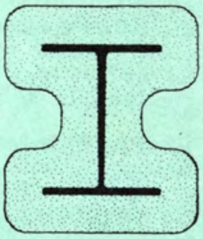
STEEL BEAM & COLUMN FIREPROOFING

COLUMN FIREPROOFING FIRECODE* Plaster

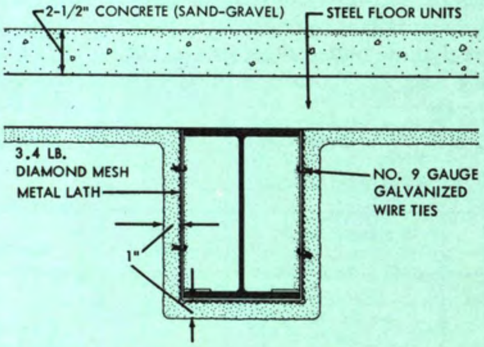
4 HOUR COLUMN

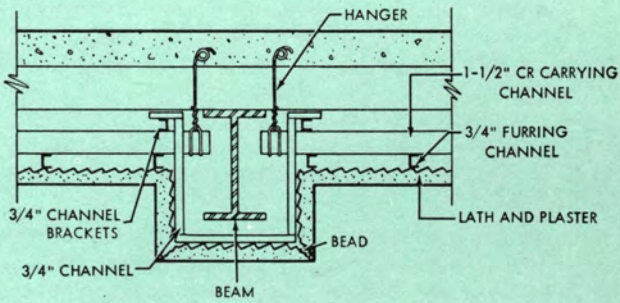


3 hr.—Contour application 2⅛″

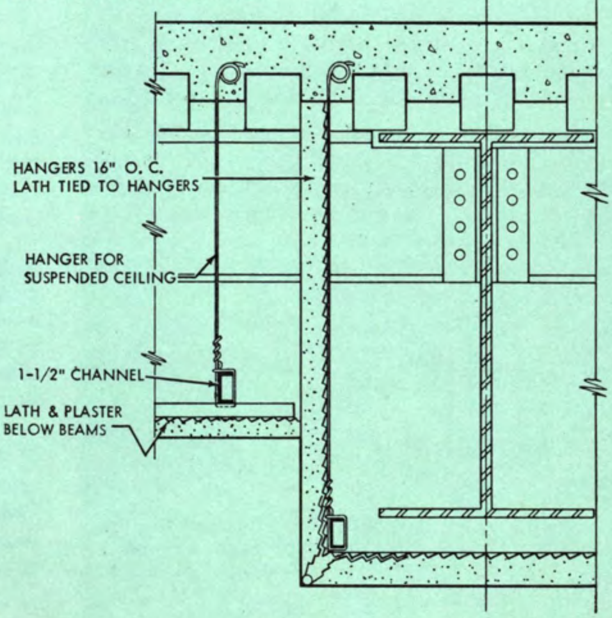
4 hr.—Contour application 2½″

BEAM FIREPROOFING Metal Lath—CAGED BEAM & FIRECODE PLASTER


2-1/2" CONCRETE (SAND-GRAVEL)
STEEL FLOOR UNITS
3.4 LB. DIAMOND MESH METAL LATH
NO. 9 GAUGE GALVANIZED WIRE TIES
1"



GIRDER FIREPROOFING


HANGERS 16" O. C. LATH TIED TO HANGERS
HANGER FOR SUSPENDED CEILING
1-1/2" CHANNEL
LATH & PLASTER BELOW BEAMS

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LATHING SPECIFICATIONS

NOTE TO THE ARCHITECT

The following comments and recommendations cover the basic specifications for the normal job requirements, and are intended as minimum guide specifications which can be adapted to specific projects and conditions.

Beyond the erection details of the various systems are other related job conditions which should be covered in the plans, details, or specifications.

It is not intended that these specifications and related details shall cover every possible design or job condition but are rather intended to assist in the preparation of specifications applicable to a given project.

IMPORTANT

1. Where lath and plaster ceilings occur under roof constructions, it is *recommended* that the plenum space be ventilated. Ventilation with or without vapor barrier and insulation shall be designed in accordance with accepted engineering practice.
2. Construction moisture must be removed from within the building by ventilation and not just moved around by fans used for drying surfaces.
3. Lath and plaster surfaces will not resist the stresses imposed by structural movement, it is recommended in the design of structures that care be taken to isolate lath and plaster surfaces from all structural elements, or that control joints be provided where lath and plaster surfaces abut structural members.
4. Plaster bases and plasters are subjected to dimensional changes due to thermal changes and moisture content. Expansive ceiling areas should have control joints spaced 50′-0″ on center each way and long runs of partitions should be provided with control joints at 30′-0″ on center.
5. Holes cut in a thin diaphragm of lath and plaster, such as door frames, recessed lights, etc., cause a redistribution of stresses within the plaster diaphragm. All openings should be reinforced, particularly at corner angles.
6. Masonry walls to be plastered should be constructed with the same care as if they were to be left exposed. Lintels over all openings, masonry bond, full bed and end joints, etc.
7. Steel Door Frames shall be fabricated and anchored so that on impact the jambs will not twist and the trim returns will not vibrate. The jamb width shall allow both the lath and plaster to enter into the jamb and *not die* against the trim return. All steel frames shall be grouted.

   Where oversize heavy doors are used, the steel frames must be grouted and door closures installed.
8. It is in the best interest of the owner and his architect to require a unit responsibility, wherein all the component parts of the partition or ceiling are supplied by one manufacturer.
9. Where plaster dies flush against metal, metal bucks, metal windows, or metal base, the plaster should be "V" grooved between the two materials.
10. Since methods and conditions of application and use are beyond our control, the United States Gypsum Company will not be responsible for failure of its products when not used according to directions and specifications.

SPECIFICATIONS

1.1 SCOPE—Outline the extent of work included.

1.2 GENERAL CONDITIONS—In cold weather, the building should be glazed and heated before lathing.

1.3 MATERIALS—All materials as herein specified shall be manufactured by the United States Gypsum Company.

1.4 GROUNDS—Grounds shall be set to provide the following minimum thickness, including 1/16″ finish:

½″ on gypsum lath plaster base
⅝″ on masonry base
⅝″ on metal lath, measured from face of lath
¾″ on Long Length ROCKLATH used for 2″ Solid Partitions or Exterior Wall Furring

Note: Greater thicknesses are required for certain fire-rated constructions.

1.5 ATTACHMENT OF ROCKLATH* PLASTER BASE

a. ROCKLATH Plaster Base shall be applied face out with the long dimension at right angles to the framing members. All joints shall be butted together and the lath shall be cut accurately and fitted neatly around all electrical outlets, openings, etc.

The end joints shall be staggered in successive courses.

b. ⅜″ *ROCKLATH Plaster Base*

Framing	Maximum Spacing	Attachment	Spacing
Wood	16″ o.c.	**Nails**—13 ga., 1⅛″ long 19/64″ flat head, blued. **Staples**—16 ga. galv. flattened wire, flat crown 7/16″ wide, ⅞″ legs having divergent points.	4 per 16″ width of lath.
		R-1 & R-2 Clips	1 per 16″
L-P Stud	24″ o.c.	USG L-P Screws, Type S. ¾″	2 per 16″ width, 2″ from each edge.
TRUSSTEEL* Stud	16″ o.c.	TL-1 Clips TR-1 Resilient Clips (& Accessories)	16″ o.c. along stud. 16″ o.c. along stud.
Metal Nailing Stud	16″ o.c.	Nail or staple as recommended by the manufacturer of the stud.	4 per 16″ width of lath.
¾″ Channels	16″ o.c.	BRACE-TITE* Clip (& Accessories)	1 per 16″ width.

½″ *ROCKLATH Plaster Base*

Wood	24″ o.c.	**Nails**—13 ga., 1¼″ long, 19/64″ flat head, blued. **Staples**—16 ga. galv. flattened wire, flat crown 7/16″ wide, 1″ legs having divergent points.	5 per 16″ width of lath.

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c. Where the type framing or spacing of framing does not allow for secure attachment of butt ends to a framing member, apply ROCKLATH* Plaster Base with the long dimension across the framing members, with end joints staggered in successive courses. Ends of lath shall fall between framing members, and be aligned and engaged using the BRIDJOINT* Clip.

d. Apply Cornerite to all interior angles. Staple to the lath only.

1.6 ATTACHMENT OF METAL LATH

a. All metal lath shall be applied with the long dimension of the sheet across the supports. Riblath shall be applied with the rib projecting against the supports.

The ends of all lath shall be lapped not less than 1 inch. If end laps are made between supports they shall be adequately tied with 18 gauge tie wire. The sides of diamond mesh lath shall be lapped not less than ½ inch. Riblath shall be lapped by nesting the outside ribs.

Wherever possible, end of lath in adjacent courses shall be staggered.

Metal lath shall be secured to all supports at intervals not exceeding 6 inches.

b. *Metal Lath*

Framing	Maximum Spacing	Attachment	Spacing
Wood Studs	SEE TABLE PAGE #16	**Nails**—4d common, driven to ¾" penetration and bent over to engage 3 strands on through the rib.	6" o.c.
		Nails—1" roofing nail 7/16" head, engaging 2 strands on through the rib.	6" o.c.
		Staples—1", 14 ga. wire staples, engaging 2 strands on a rib.	6" o.c.
Wood Joists		**Nails**—1½", 11 ga. barbed roofing nail, 7/16" head, engaging 2 strands or a rib.	6" o.c.
Steel Studs, Channels or Rods		No. 18 ga. tie wire	6" o.c.
Nailing Studs or Channels		Nail or staple as recommended by manufacturer of the member.	6" o.c.

c. At all interior angles, metal lath shall be formed into the corners and carried out onto the abutting surface, and adequately secured.

1.7 LATHING ACCESSORIES

a. Metal base shall be 2½" high, (18) (20) gauge, painted. Metal Base shall be notched to a neat miter in forming all angles. In continuous runs, ends shall be evenly butted and internally spliced with a splice plate. Base shall be securely held in place by clipping to base clips. Base clips shall be secured to concrete floor using concrete stub nails or power driven anchors.

b. Metal Corner Bead (Type No. ____). Corner Bead shall be provided on all external plaster corners, and shall be in single lengths where the length of the corner does not exceed standard stock lengths. Fasten securely with tie wire, galvanized staples, etc., spaced not over 8" on center stagger in two wings.

c. Casing Bead (Type No. ____). Casing bead shall be installed where indicated. Ends shall be accurately cut and mitered and the casing bead shall provide full plaster grounds when securely installed.

d. Base Screed (Type No. ____). Base Screed shall be installed 6 inches above the finish floor, unless otherwise indicated. Set screeds level, true to line, in lengths as long as practical, with joints aligned with a suitable splice. Wire tie or staple in place.

e. Cornerite—3" x 3" Cornerite shall be installed in all interior plaster angles, except where diamond mesh lath has been bent into the corners. Staple, wire tie, or nail at the edges.

f. Reinforcing—Install a strip of self-furring diamond mesh lath over joints between dissimilar plaster bases.
At all openings except where metal lath plaster base used, reinforce the corners attaching a 12" x 24" piece of self-furring diamond mesh lath diagonally across the corners.

g. Control Joints—Control joints shall be provided as indicated and shall consist of USG Control Joint or two pieces of #66 casing bead back to back. Lath, masonry, grillage and supporting members are to be broken behind the control joint.

1.8 PARTITION—Partitions shall be of the type and size shown on the plans or as herein specified.

Partitions shall be aligned accurately according to the partition layout.

Runner tracks where required shall be securely attached.

1. *To Concrete Slabs*—using concrete stub nail or power driven anchors, spaced not to exceed 24 inches on center.
2. *To Ceiling Grillage*—Wire tie, using a double strand of 18 gauge tie wire, spaced not to exceed 16 inches on center.
3. *To Plaster or Gypsum Lath*—Toggle bolt, spaced not to exceed 24 inches on center.

1.8a TRUSSTEEL* Stud Specifications—TRUSSTEEL Studs shall be of the size shown on the plans or as herein specified. All studs shall be of sufficient length to properly engage the floor and ceiling runner track.

Snap-in Ceiling Track—a minimum of ½ inch engagement.

Regular Runner Track and Shoes—not more than 3 inches short of the runner track.

Studs, track, clips and accessories shall be as manufactured by the United States Gypsum Company for installation as a partition system.

1.8a.1 Erection—Regular or Snap-in Runner Track shall be securely attached as herein specified.

Combination Stud-Base Clips may be used in lieu of floor track, spaced not more than 16 inches on center, secured with concrete stub nails or power driven anchors where a 2½" metal base is being used.

Studs shall be placed vertically, engaging runner tracks or Stud-Base Clips. Studs shall be secured to Regular Runner Track at floor and ceiling with a pair of shoes, crimped or wire tied in place using a double strand of 18 gauge tie wire. Two wire ties of double strand 18 gauge wire shall be used at all studs immediately adjacent to door frames or borrowed light frames.

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Studs shall be spaced not to exceed 16 inches on center, and a stud shall be placed 2 inches from abutting partitions, internal corners, partition terminals, with double studs at all door or borrowed light frames.

Studs shall be inserted into steel door frames, nested in notches of the jamb anchor clips (four per side) and each chord of the stud securely wire tied at each of the jamb anchors.

An aligning ¾″ channel shall be used over each door head, extending out on each side of the frame to the third stud. The channel shall be securely wire tied to the chord at each stud.

1.8a.2 ROCKLATH* Plaster Base (Direct Attachment)—ROCKLATH, (Plain) (Perforated), application shall start at the bottom with long dimension at right angle to the studs. The lath shall be clipped in place using TRUS-LOK* Starter Clips TL-2, or Drive-in Clips, TRUS-LOK Field Clips TL-1 and TRUS-LOK Finisher Clips TL-3, spaced not to exceed 16 inches on center. End joints of lath shall be staggered between studs and aligned using at all lath corners the BRIDJOINT B-1 Field Clips.

1.8a.3 Resilient ROCKLATH* Plaster Base—ROCKLATH, (Plain) (Perforated), application shall start at the bottom course with long dimension at right angle to the studs. The lath shall be resiliently clipped in place using the Resilient Starter and Finisher Clip R-SF and the Resilient Field Clip TR-1, spaced not to exceed 16 inches on center. End joints of the lath shall be staggered between studs and aligned using at all lath corners the BRIDJOINT B-1 Field Clip.

1.8a.4 Metal Lath—Metal Lath (3.4# Diamond Mesh) (Z-Riblath) (⅜″ Riblath) shall be applied with the long dimension of the sheet across the supports. Riblath shall be applied with the rib projections against the supports.

The ends of all lath shall be lapped not less than 1 inch. If end laps are made between supports, they shall be adequately laced or tied with 18-gauge tie wire. The sides of diamond mesh lath shall be lapped not less than ½ inch. The sides of riblath shall be lapped by nesting outside ribs, and shall be wire-tied to every support, and between supports not to exceed 9 inch intervals. All metal lath shall be placed so that the lower sheets overlap the upper sheets. Wherever possible, ends of lath in adjacent courses shall be staggered.

Metal lath shall be secured to all supports, except those covered in subsequent sections, with 18-gauge tie wire at intervals not exceeding 6 inches. Ends of all ties shall have three full twists, then shall be bent up in the plane of the lath.

4. Optional Inclusions

a. 16″ x 96″ ROCKLATH* plaster base is preferred on all TRUSSTEEL* Stud installations, and particularly over door frames.

b. Wood grounds for fixture attachment must always be wire-tied to the inside of the chord to prevent breaking up the stress skin of the lath and plaster.

c. *Door Frames*

(1) Minimum of 16-gauge, shop primed.

(2) Floor anchors securely attached using *two* power driven anchors or equivalent attachment to each clip. Clip shall prevent rotation at the base.

(3) Four jamb anchors shall be provided on each side of the frame, welded to the trim returns. (See detail page 26)

(4) Grouting of the door frame is recommended for all installations and is required where heavy or oversize doors are used. Grout shall be raked out to allow lath and plaster to be inserted into the frame. Under no conditions shall the lath or plaster die against the trim return of the door frame.

d. In resilient partitions used for reasons of sound isolation it is necessary to take precautions to prevent leakage.

(1) Specify a neoprene gasket under all floor and ceiling tracks.

(2) Eliminate cutting holes back to back or adjacent to each other such as electrical outlets.

(3) Use *sand aggregate* only.

(4) Sound isolation can be improved by using USG Sound Attenuation Wool, 3″ blanket stapled or adhesively applied to the back side of one face of ROCKLATH, or standing a 1″ by 16″ by ceiling height 6 lb. density USG Sound Attenuation Wool Pad.

1.8a.5 Resilient Metal Lath—Resilient Clip No. 400 shall be snapped over the chord of the TRUSSTEEL* Stud, spaced not to exceed 16 inches on center with a clip located not more than 4 inches from the floor and ceiling. ¼ inch Pencil Rods of ceiling height length shall be snapped into the small loop of the 400 Clip.

Note: (*Use* paragraph 1.8*a*.4 for attachment of Metal Lath)

1.8b L-P STUD SPECIFICATION—L-P Studs shall be of the size shown on the plans or as herein specified. All studs shall be of sufficient length to properly engage the runner tracks floor to ceiling.

Studs, track, plaster base, clips, screws and accessories shall be as manufactured by the United States Gypsum Company for the installation as a partition system.

1.8b.1 Erection—The L-P Runner Tracks shall be aligned accurately according to the partition layout, and securely attached.

Studs shall be placed vertically, engaging both floor and ceiling runner tracks. When necessary, studs may be spliced by nesting two studs with a minimum lap of 8 inches and securely tied together with screws in each flange.

Studs shall be spaced not to exceed 24 inches on center and a stud shall be placed 2 inches from abutting partitions, internal corners, partition terminals, and other similar locations.

Studs shall be inserted into the steel door frame, accurately centered, and attached to the anchor clips securely, using a bolt or screw attachment.

a. Where lightweight doors are used a second stud shall be nested to form a box section and anchored together by a pair of screws at each anchor clip.

b. Where heavy doors or oversize doors are used the single stud shall be grouted in place.

Over the metal frames a cut-to-length section of track, with a web flange bend at each end shall be used as a header to receive studs above the frame.

Note: In no instance shall the lath and plaster or the plaster die against a trim return of the frame. Lath and plaster shall enter into the frame.

1.8b.2 Lathing ROCKLATH* Plaster Base—ROCKLATH shall be attached horizontally to L-P Studs with two ¾″ L-P Screws, Type S, at each stud. Screws shall be placed approximately 2 inches from the edges of the ROCKLATH. Screws shall be power driven with an electric Scrugun. End joints of ROCKLATH shall be staggered between studs and aligned using at all lath corners the B-1 BRIDJOINT* Clip.

1.8b.3 Metal Lath—Studs spaced not to exceed 16 inches on center for 3.4# Diamond Mesh or Z-Riblath, or 24 inches for ⅜″ Riblath.

Metal lath shall be applied with the long dimension of the sheet across the studs. Riblath shall be applied with rib projection against the stud.

The ends of all lath shall be lapped not less than 1 inch. If end laps are made between studs, they shall be adequately tied with No. 18 gauge tie wire.

The sides of diamond mesh lath shall be lapped not less than ½ inch. The sides of riblath shall be lapped by nesting outside ribs. All laps shall be wire tied not to exceed 9 inches on center between supports. Wherever possible, ends of lath in adjacent courses shall be staggered.

⅜″ Riblath shall be screw attached using a ¾″ L-P Screw, Type S, through each rib.

Diamond mesh shall be attached 6 inches on center using the ¾″ L-P Screw, Type S, so positioned as to engage two strands of the metal.

1.8c Solid Metal Lath & Plaster Partition—Studs shall be ¾″ C.R. Channel, and the partition thickness two inches unless otherwise noted. Studs shall be spaced not to exceed 16 inches on center and shall be of sufficient length to properly engage the USG Z-Type Ceiling Runner and the USG Floor Runner and Screed, or the USG Double Base Clips. A stud shall be wire tied at each jamb of steel or wood door frames and at openings cased with USG's 2″ Partition Terminal.

A horizontal reinforcement shall be used over all openings and shall consist of a ⅜″ round rod or a ⅛″ by 1¼″ flat bar. Saddle tied to each vertical stud, the bar or rod should extend out to the first stud beyond the frame.

(*Attachment of Metal Lath:* See paragraph 1.6)

1.8d Studless Solid Metal Lath & Plaster Partition—Floor tracks shall be (USG) 2½″ Metal Base and Double Base Clips) or (USG Floor Runner and Screed).

Ceiling runner shall be USG L-Type Ceiling Runner, located so that the USG ⅜″ Riblath, 3.4 lbs., will be located in the center of the partition.

The riblath shall be erected vertically, attached to the floor runner or set in a groove of the grouted metal base, and securely tied 8 inches on center to the ceiling runner.

Wire tie the nested edges of sheets 9 inches on center, and securely tie the metal lath to jamb inserts or door frames.

Partition terminals and cased openings shall be provided by USG's 2″ Partition Terminal wire-tied securely in place.

Temporary bracing shall not be less than ¾″ C.R. Channels placed horizontally near midheight of the partition and tied to the metal lath 24 inches on center and with 1½″ angle braces placed vertically not over 6′-0″ on center. Wedge the vertical braces at top and bottom and tie the horizontal ¾″ channel to hold lath in place.

1.8e Solid ½″ Long Length ROCKLATH* Plaster Base & Plaster Partition—Floor runner shall be (USG) 2½″ Metal Base attached to Double Base Clips 24 inches on center) or (USG Floor Runner and Screed).

USG L-Type Ceiling Runner shall be used for ceiling attachment and as tie-in shoes where the partition abuts columns, exterior walls and partitions.

½″ Long Length ROCKLATH shall be cut in length to allow ¼″ minimum and 1¼″ maximum top clearance at the ceiling. The ROCKLATH Plaster Base shall be erected vertically. Vertical edges of ROCKLATH shall be kept as plumb as possible and the V-joint edges brought into close contact with adjacent edge. No vertical cut edges of lath shall be used in the central portion of partition. The use of lath having cut edges shall be confined to the ends of the partition or at door frames. ROCKLATH shall be neatly cut for electrical conduit, other piping or door struts, and one side of all openings thus formed shall be covered with 15# felt under metal lath fastened to the ROCKLATH. In cases where flexible electrical cable is fastened to the face of the lath or where other piping or door struts extend beyond the face of the lath, provision must be made for a full ⅜″ thickness of basecoat plaster over them. Where ROCKLATH Plaster Base intersects other partitions, exterior walls or columns, it shall be wire-tied or fastened to tie-in shoes at third points of height.

ROCKLATH shall be placed during construction as recommended by the United States Gypsum Company.

Related Inclusions:

Steel frames shall be furnished with clip inserts for centering ROCKLATH & plaster base in partition. If door frame struts are furnished, they shall not exceed ⅝″ in size in direction of partition thickness.

Fixture Attachment—Lightweight fixtures and trim shall be installed by drilling set dry plaster to a minimum depth of ¾″ and inserting a plastic plug or other expandable anchor for anchorage of attachment screws.

Cabinet and shelving grounds shall consist of ¾″ (actual dimension) by 1½″ wood strips, having 6d (minimum) coated nails driven ⅝″ into both edges at not over 12″ on center, attached to the ROCKLATH by nailing, wire tying or bolting. Lavatory and sink hangers on solid partitions shall be installed by wire tying an 18-gauge perforated plate of size equal to hanger (maximum 6″ x 24″) to opposite side of the lath and placing hanger bolts prior to plastering.

Ceramic Tile—(Where ceramic tile is required over ROCKLATH, self-furring diamond mesh metal lath shall be stapled over the ROCKLATH plaster base with staples spaced approximately 8″ on center, horizontally and vertically, and portland cement-lime plaster shall be applied in scratch and brown coats to ⅝″ grounds over lath as a base for the ceramic tile). (Ceramic tile shall be adhesively attached over the finished gypsum plaster in accordance with adhesive manufacturer's specifications.)

Electrical Work—Electrical conduit and outlet boxes shall be as specified elsewhere. Switch boxes and convenience outlet boxes shall not exceed 1½″ in depth and, if plaster ring is used on 4″ x 4″ convenience outlet boxes opening one side only, the box shall not exceed 1¼″ in depth, to provide ½″ of plaster on the back side. Electrical conduits or cables shall be placed so that a full ⅜″ thickness of basecoat plaster can be applied over them.

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1.8f Channel Stud Core Wall—The core wall shall consist of two lath and plaster diaphragms supported by a channel iron grillage.

Runner tracks shall be provided at each face.

Floor runners shall consist of Single Base Clips at 16 inches on center with 2½″ USG Metal Base Face Plate or the USG Floor Runner and Screed.

The ceiling tracks shall be USG Z-Type Ceiling Runner.

The double row of ¾″ C.R. Channel Studs shall be spaced not to exceed 16 inches on center and shall be of sufficient length to properly engage the floor and ceiling runners.

Aligning ¾″ channels shall be saddle-tied to the inside face at each stud. A pair of aligning channels on partitions 9′-0″ or less at mid-point or at third points not to exceed 4′-0″.

The channel grids shall be tied together by forming brackets of ¾″ channels, spaced 30 inches on center along the horizontal aligning channels. Legs of the brackets and channels to be nested and securely wire-tied.

Note: (For *Metal Lath Plaster Base*—Use paragraph 1.6)
(For *ROCKLATH Plaster Base*—Use paragraph 1.5)

1.9 WALL FURRING

1.9a Vertical Furring with TRUSSTEEL* Studs—Use the same basic specification covered in paragraphs, 1.8a, 1.8a.1, 1.8a.2, or 1.8a.3.

Supplementing this specification with the following:

The back chord of the TRUSSTEEL Stud must be bridged using continuous ¾″ channels at the third points or not to exceed 48 inches on center. The channels to be saddle-tied at each stud.

Maximum height of TRUSSTEEL Stud furring shall not exceed:

Stud Size	Free Standing	Braced
1⅝″ TRUSSTEEL Stud	6′-0″	9′-0″
2½″ TRUSSTEEL Stud	10′-0″	15′-0″
3¼″ TRUSSTEEL Stud	14′-0″	21′-0″
4″ TRUSSTEEL Stud	15′-0″	22′-0″
6″ TRUSSTEEL Stud	17′-0″	26′-0″

Braced furring requires a rigid, secure attachment at 24 inches on center along the mid-point bridging channel to the masonry back-up.

1.9b Long Length ROCKLATH Plaster Base Wall Furring System—Floor runner track shall be USG Floor Runner and Screed, or USG Metal Base and Single Base Clip grouted and grooved.

USG L-Type Ceiling Runner shall be attached to the construction above as required, plumbed up from the floor runner, or a furring channel shall be installed 6″ from top as specified below.

USG Adjustable Wall Furring Brackets, with serrated edges up, shall be attached to the masonry walls not over 4″ from columns or other abutting construction and not over 36″ on center horizontally and vertically, and as required above and below windows, using (one 2″cut nail in mortar joints of brick clay tile, or cement block or in the field of lightweight aggregate blocks) (⅝″ concrete stub nails or power driven nails or other suitable fasteners in monolithic concrete). Fastenings shall be driven through top hole of bracket. Furring channels shall be laid horizontally on the furring brackets with the legs down, plumbed to a line with the ceiling runner and base, and wire tied to the bracket with a double strand of 18-gauge tie wire. Excess bracket length shall be bent down.

⅜″ Long Length Insulating ROCKLATH shall be applied with the long edges vertical and butted lightly, with the foil facing the furred space. The bottom of the lath shall be set in the groove provided in the base grout or wood runner. The top of the lath shall be fastened to the ceiling runner with USG ceiling runner clips, two per piece of lath, 4″ to 5″ from each edge. Each piece of lath shall be wire tied over a nail at the edges to each intermediate horizontal channel. ROCKLATH shall be cut and fit to allow slight clearance around window frames. 3″ Striplath shall be applied over the full length of all ROCKLATH joints above and below windows.

1.9c Channel Grid Furring System—¾″ channel studs shall be erected vertically 16 inches on center and aligned and secured by:

1. Engaging nubs in the USG Floor Runner and Screed or the Single Base Clip.
2. Engaging the Z-Type ceiling runner.
3. Saddle tying to horizontal ¾″ channel girts spaced not to exceed 4′-6″ on center.

The horizontal girts shall be secured to the masonry back-up at 36 inches on center by saddle tying the channel to serrated leg of USG Adjustable Wall Furring Brackets.

1.9c.1 (Use paragraph 1.5 for *Attachment-ROCKLATH Plaster Base*)
(Use paragraph 1.6 for *Attachment-Metal Lath*)

1.9d Resilient Metal Lath Furring & Sound Isolation—USG #500 Resilient Clips shall be installed 18 inches on center vertically and 16 inches on center horizontally. With 2″ staples or 10d cut nails driven through the clip into the solid section of PYROBAR* gypsum tile. With 10d cut nails driven through the clip into the mortar joint of concrete masonry or clay tile. ¾″ cold rolled channels are wired to the inside of the tongs of the clips with legs of channels away from lath.

(*Metal Lath Installed* as paragraph 1.6a)

1.9e Resilient ROCKLATH* Plaster Base Furring & Sound Isolation—USG Metal Base shall be installed to establish proper grounds at floor line (paragraph 1.7), fully grouted and the grout grooved to receive ROCKLATH Plaster Base. *Alternate:* A wood runner grooved to receive ROCKLATH shall be aligned to provide proper grounds and securely fastened in place.

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L-Type ceiling runner shall be properly aligned and secured to the construction above. ROCKLATH is installed horizontally, fitted into the groove provided and secured at top of sheet by USG R-5 Resilient Clips spaced 16 inches on center along top edge. R-5 Clips shall be attached to masonry; with a 2″ cut nail through the clip into block or masonry joint for block walls; with a 1¾″ fence staple horizontally through a hole knocked in clay tile walls; with a 2″ fence staple driven across the leg of the clip into PYROBAR* Partition Tile. Continuous courses of ROCKLATH shall be similarly applied with end joints staggered and joined at top and bottom with R-5 Clips. The top course shall be fastened to the L-Type ceiling runner with USG Ceiling Runner Clips 16 inches on center.

2.0 RESILIENT ROCKLATH* PLASTER BASE ON WOOD FURRING—⅜″ ROCKLATH Plaster Base shall be applied with end joints staggered. R-SF Clips shall be nailed to the framing at 16 inches on center at the top and bottom to provide attachment for the first and last courses of ROCKLATH. ROCKLATH shall be attached to the framing members by means of USG R-1 Resilient Clips nailed to framing and placed at every intersection of ROCKLATH edges with framing members, and at corners with USG R-2 Resilient Clips so that the ROCKLATH is secured by the clips spaced 16 inches on center in both directions. USG Corner Beads, Cornerite and other specified lathing accessories shall be stapled only to ROCKLATH.

2.1 SUSPENDED CEILINGS

2.1a Erection of Grillages—9 gauge hangers shall be spaced not over 4′-0″ in the direction of the 1½″ main runner channels and not over 3′-0″ in the direction at right angles to the main runners, and within 6 inches of the ends of main runner runs and of boundary walls, girders or similar interruptions of ceiling continuity. (For alternate hangers, main runner channels and cross furring channels see table on page 16.)

Main runners shall be placed not over 4′-0″ on center, properly positioned, leveled, and hangers shall be saddle tied along runner.

Main runners shall not be let into nor come in contact with abutting masonry walls. Runner channels shall be located within 6 inches of the walls to support the ends of the ¾″ cross furring channels.

Cross furring channels shall be spaced as required for plaster base used and securely saddle tied with two strands of 16-gauge tie wire to main runners and shall not be let into or come in contact with abutting masonry walls.

2.1b Metal Lath Ceilings—(Metal lath is applied to suspended grillage as in paragraph 1.6a.)

2.1c Furred Ceiling on Steel Joists—(4′-0″ or less on center).

Furred members shall be ¾″ cold rolled channels and shall be erected at right angles to the steel joists. They shall be securely attached to the bottom flanges.

(Metal Lath Applied to Grillage as paragraph 1.6a, or BRACETITE* ROCKLATH* Plaster Base applied as paragraph 2.1d).

2.1d Suspended BRACE-TITE* Clip Ceilings—(Grillage is installed as paragraph 2.1a with 16 inch spacing of ¾″ furring channels.)

ROCKLATH* Plaster Base shall be applied with the long dimension at right angles to the ¾″ channels and secured to the channels with BRACE-TITE Field Clips. ROCKLATH end joints shall fall between channels and be secured with B-1 field clips on each side.

One-Hour Rating—Perforated ROCKLATH, ⅝″ perlite plaster.

Two-Hour Rating—Lengths of 14-gauge wires shall be run diagonally across ceiling through each BRACE-TITE clip loop—½″ perlite plaster or ⅝″ sanded plaster.

Three-Hour Rating—Same as two-hour rating except change furring channel spacing from 16 inches on center to 12 inches on center and use ⅝″ perlite plaster.

Four-Hour Rating—Same as three-hour rating except add the following: "Staple 20-gauge hexagonal mesh to lath and wire tie mesh to furring channels at long edge of the lath, and use 1″ perlite plaster.

2.2 STEEL COLUMN FIREPROOFING

2.2a ROCKLATH* Plaster Base

For 1, 1½, 2 or 3 hour fire-rated construction—⅜″ Perforated ROCKLATH shall be applied vertically to the column faces and bridging the web spaces being secured by double strands of 18-gauge tie wire 15 inches on center. USG 1-A Corner Beads shall be set at each corner to establish the grounds shown.

For 4 hour rating—A double thickness of ½″ Long Length ROCKLATH shall be applied vertically to column faces and bridging the web space being secured by a double strand of 18-gauge tie wire 24 inches on center. One-inch hexagonal 20-gauge galvanized wire fabric shall be wrapped around the column and fastened in place over the ROCKLATH. USG 1-A Corner Bead shall be tied to the corners to provide 1½″ grounds over plaster base.

2.2b Metal Lath Plaster Base—Self-furring Diamond Mesh Lath shall be formed to neatly fit the column and wire tied not over 6 inches on center at laps. *Alternate:* Install ¾″ channel brackets and studs as shown to provide required chase. Tie diamond mesh lath to channels with 18-gauge tie wire.

USG 1-A Corner Bead shall be wire tied to metal lath corners to provide plaster grounds shown.

2.2c Column Fireproofing with PYROBAR Gypsum Tile (See page no. 21).

2.2d Steel Beam Fireproofing—Framework shall be formed, as shown on drawings, of ¾″ channels or pencil rods. ¾″ channel longitudinal furring brackets shall not be spaced more than 3′-0″. Spacing for brackets formed of ¼″ pencil rod shall not exceed 19″.

Without longitudinal furring bracket, spacing is limited to 13½″ for 3.4# diamond mesh lath and a minimum of one longitudinal channel is required to hold bracket alignment. Grounds shall be installed to insure required plaster thickness shown.

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Main runners shall be placed not over 4′-0″ on center, properly positioned, leveled, and hangers shall be saddle tied along runner.

Main runners shall not be let into nor come in contact with abutting masonry walls. Runner channels shall be located within 6 inches of the walls to support the ends of the ¾″ cross furring channels.

Cross furring channels shall be spaced as required for plaster base used and securely saddle tied with two strands of 16-gauge tie wire to main runners and shall not be let into or come in contact with abutting masonry walls.

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Three-Hour Rating—Same as two-hour rating except change furring channel spacing from 16 inches on center to 12 inches on center.

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USG 1-A Corner Bead shall be wire tied to metal lath corners to provide plaster grounds shown.

2.2c Column Fireproofing with PYROBAR Gypsum Tile (See page no. 21).

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Without longitudinal furring bracket, spacing is limited to 13½″ for 3.4# diamond mesh lath and a minimum of one longitudinal channel is required to hold bracket alignment. Grounds shall be installed to insure required plaster thickness shown.

"USG", "RED TOP", "BRIDJOINT", "PYROBAR", "ROCKLATH", "TRUSSTEEL", "STRUCTO-LITE", "TRUS-LOK", and "BRACE-TITE" are registered trademarks, and "COLOR-RITE" is a trademark owned by the United States Gypsum Company, and used by it to distinguish its products. "USG" identifies the particular metal products, "RED TOP" and "STRUCTO-LITE" identify the particular plasters, "BRIDJOINT" and "TRUS-LOK" identify the particular clips, "PYROBAR" identifies the particular gypsum partition tile, "ROCKLATH" identifies the particular gypsum lath or plaster base, "TRUSSTEEL" identifies the particular stud, "COLOR-RITE" identifies the particular metal lath, all manufactured only by United States Gypsum Company.

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A.I.A. File 35-H-6

TECHNICAL INFORMATION

VAUGHAN WALLS*

MOVABLE GYPSUM DRYWALL PARTITIONS

UNITED STATES GYPSUM

A.I.A. File 35-H-6

1964

*Trademark of Vaughan Interior Walls, Inc.

VAUGHAN WALLS
MOVABLE GYPSUM PARTITIONS

DESCRIPTION

Movable Vaughan Walls are non-load-bearing movable partitions consisting of two basic components; modular gypsum panels, floor and ceiling runners. Special USG® gypsum wallboard panels are laminated into 2¼″ thick units requiring no studs or intermediate posts. This system has fewer component parts than other movable walls. It fits any height requirement from less than ceiling height to 14′ maximum ceiling height, and combines with a wide variety of materials; glass, wood, plastic and decorative metals for unlimited architectural expression.

BASIC PARTITION COMPONENTS

1. **VAUGHAN WALLS Panels** consists of three layers of gypsum wallboard—two ⅝″ face panels laminated to a 1″ core. The simple modular designed panels are laminated to form tongue and groove edges. All face panels are mill fabricated with beveled longitudinal edges.

2. **Steel or Aluminum**
   a. Metal components such as floor or ceiling runners, closure plates, door or borrowed light frames, etc., are available in extruded aluminum. All exposed aluminum members are etched and anodized to provide a neutral satin gray finish that requires little maintenance.
   b. Floor runners and door frames are also available in steel. The steel components are shop-primed ready for final painting decoration.
   c. Doors or borrowed lights can be located at almost any point desired by fitting them into openings cut in the panels.

3. **Finishing & Accessories**
   a. Internal corners and intersection reinforcement consists of Perf-A-Tape* Joint System where flush finishing is desired or metal trim is not specified. External corners are protected with Dura-A-Bead and finished flush with joint compound for lasting protection.
   b. Foam type polyethylene or similar gaskets are used as a seal between all ceiling runners and ceiling surfaces or elsewhere as required by job conditions.

Simple to Relocate or Modify

Movable Vaughan Walls move in minutes. With closure plates unfastened, panels are quickly removed. No studs to dismantle. Doors and windows may be quickly added or removed from existing walls without disturbing adjacent panels. Through simplicity of design, Movable Vaughan Walls are nearly 100% salvageable and outstandingly economical for use in existing or new construction.

AUTHORIZED ERECTORS

Dependable contractors are carefully selected and trained as authorized Erectors of Movable Vaughan Walls by Vaughan Interior Walls, Inc. Their qualified services include assistance in architectural detailing, original installations and future relocation of partitions to suit changing space requirements.

TECHNICAL SERVICE

U.S.G. maintains offices in all major cities throughout the United States, staffed with personnel prepared to provide information or assistance without obligation. Supplementing these representatives, the U.S.G. Architect Service Department is available to assist the architect or engineer.

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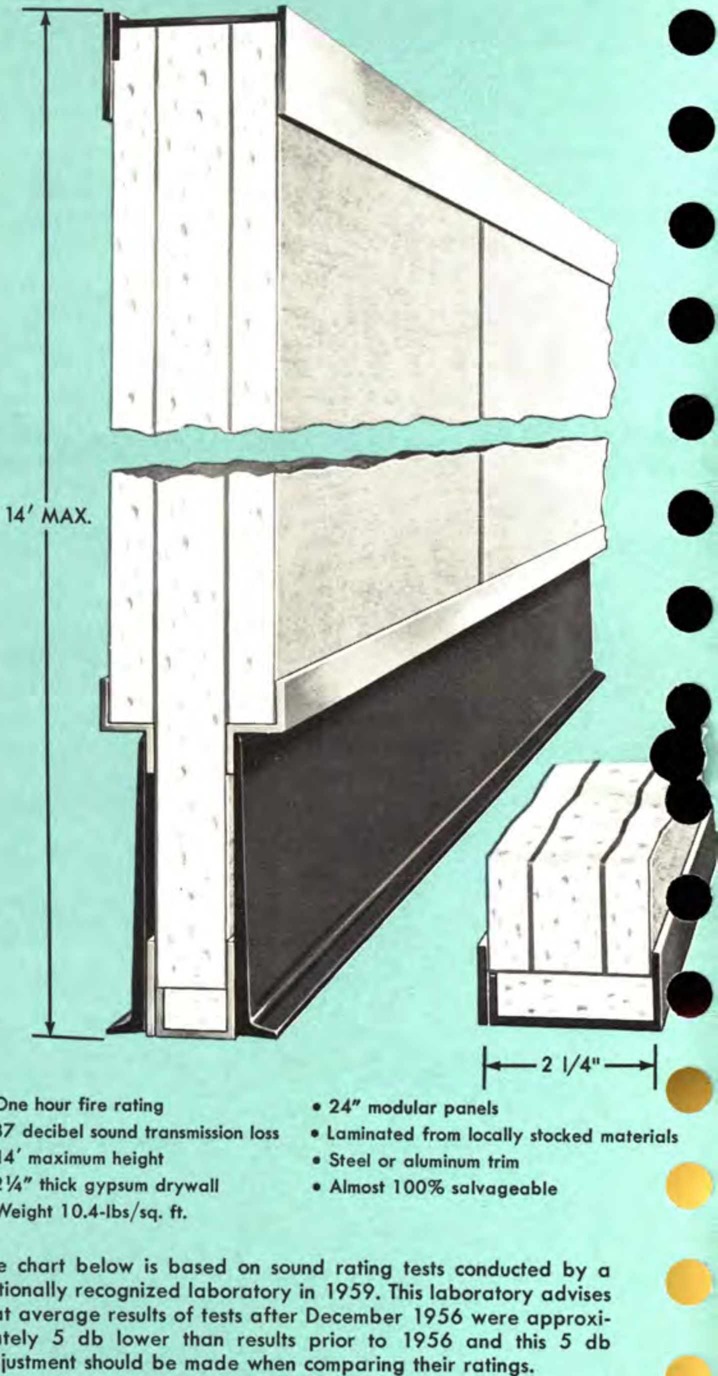
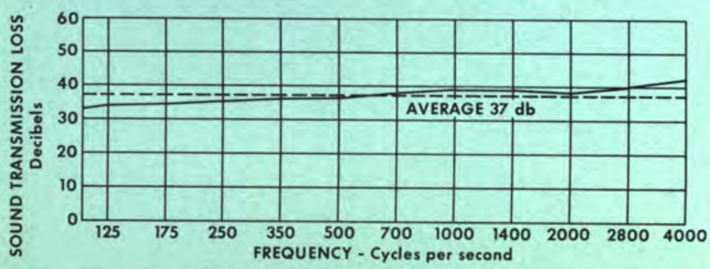


- **One hour fire rating**
- **37 decibel sound transmission loss**
- **14′ maximum height**
- **2¼″ thick gypsum drywall**
- **Weight 10.4-lbs/sq. ft.**
- **24″ modular panels**
- **Laminated from locally stocked materials**
- **Steel or aluminum trim**
- **Almost 100% salvageable**

The chart below is based on sound rating tests conducted by a nationally recognized laboratory in 1959. This laboratory advises that average results of tests after December 1956 were approximately 5 db lower than results prior to 1956 and this 5 db adjustment should be made when comparing their ratings.



*T.M. Reg. U.S. Pat. Off.

The most expedient way to obtain any additional information regarding (fire, sound, etc.) test data in this publication is to direct inquiries to:
UNITED STATES GYPSUM

FUNCTION & UTILITY

ADAPTABILITY—VAUGHAN WALLS may be used in new construction or for modernizing old buildings. They form any partition less than ceiling high or ceiling height and offer complete flexibility in locating glazed panels and doorways. They require no expansion or control joints with standard "V" joint walls.

INCOMBUSTIBILITY—Movable VAUGHAN WALLS consist of aluminum and steel components, and gypsum wallboard . . . recognized fire resistant material.

FIRE RESISTANCE RATING—VAUGHAN WALLS with USG* Gypsum Wallboard have successfully passed one-hour fire resistance tests conducted by a nationally recognized laboratory.

IMPACT NOISE—The $2\frac{1}{4}$″ of solid gypsum gives Movable VAUGHAN WALLS a feeling and sound of substance and permanence.

SOUND TRANSMISSION LOSS RATINGS—The sound transmission loss rating of VAUGHAN WALLS as normally constructed is better than that possible to obtain in most movable partitions without costly modifications. Special VAUGHAN WALL constructions substantially increase sound transmission loss values. If values in higher ranges are required, the details can be provided by a United States Gypsum Company Architect Service Representative or a VAUGHAN WALLS Authorized Erector.

ECONOMY—Tailor-made Movable VAUGHAN WALLS are laminated from locally stocked materials. That is why unexpected job problems or changes in layout are easily handled without costly delays in job progress. This partition is easily and speedily erected permitting early occupancy and a saving in erection labor. VAUGHAN WALLS are readily adaptable to the changing needs of area layout and are nearly 100% salvageable.

ELECTRICAL WIRING—The one-inch core of the panel is routed during the job-lamination process to accept electrical wiring and outlet boxes. This permits flexibility in location of all utility and service requirements. Electrical outlets may be positioned anywhere in the panel for maximum convenience to the user.

FIXTURE ATTACHMENT—The VAUGHAN WALL is structurally sufficient to support light and heavy duty fixtures such as cabinets, book shelves, etc. The maximum allowable load (Direct Withdrawal) per anchor for commonly used anchors in VAUGHAN WALL is:

a. $\frac{1}{4}$″ Elevator Bolt (min. $\frac{3}{4}$″ head diameter)—100-lbs.
b. 1″—No. 8 Sheet Metal Screw, driven through the face panel into a minimum 4″ x 4″, 24-gauge sheet metal plate; (Laminated between core and face layer)—50-lbs.
c. 2″—No. 10 Sheet Metal Screw, hand driven to avoid stripping panel core and surface paper—25-lbs. (Metal Plate not required)

The total allowable withdrawal load (Load Perpendicular) per 2′ wide VAUGHAN WALL PANEL—100-lbs., max.

APPEARANCE—Aluminum trim gives a pleasing accent to partition perimeters when panels are decorated. Steel trim can easily be painted to match, harmonize or contrast with the final finish selected for the panels.

VAUGHAN WALL Authorized Erectors offer mounted Wood Veneers or Plywood Panels adhesively applied for special effects.

LIMITATIONS

1. VAUGHAN WALLS are intended to be used only as non-load-bearing walls.
2. Maximum height is 14′ *(1)*.
3. Maximum unsupported run for less than ceiling height partition is 14′.
4. They should not be used where normally exposed to excessive moisture or humidity.
5. Floor anchor spacing of bank rail partition not to exceed 8′-0″ on centers.

Above: CH (ceiling height); FG (full glass combined); Left: Full glass (FG); and wood faced ceiling height.

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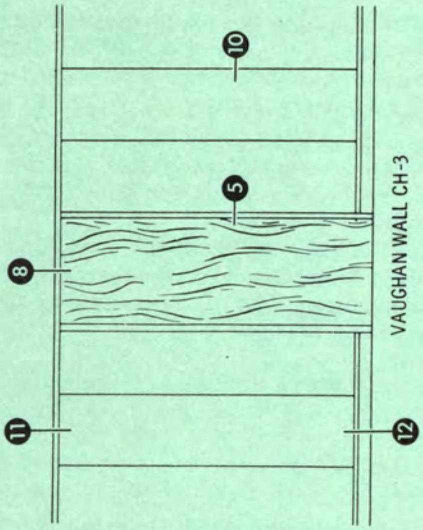
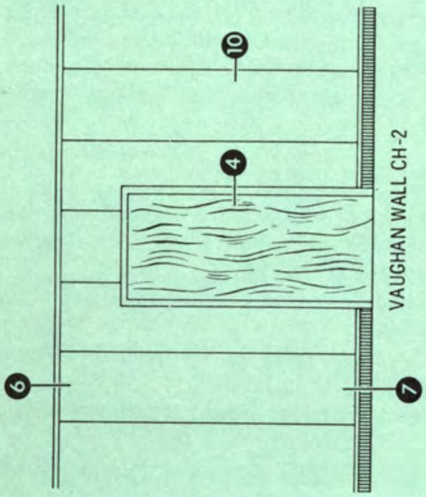
(1) WHEN THE RIGIDITY of a permanent partition is desired, maximum height shall be 10′, and perimeter restraint must be provided.

VAUGHAN WALLS
MOVABLE GYPSUM PARTITIONS

ELEVATIONS Scale: 3/16" = 1'—0"
SECTIONS Scale: 3" = 1'—0"



VAUGHAN WALL CH-3



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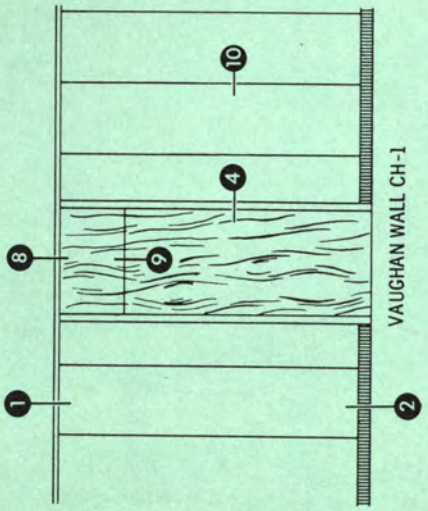
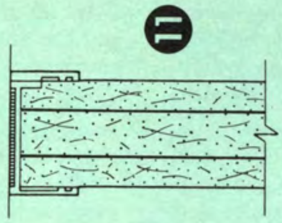
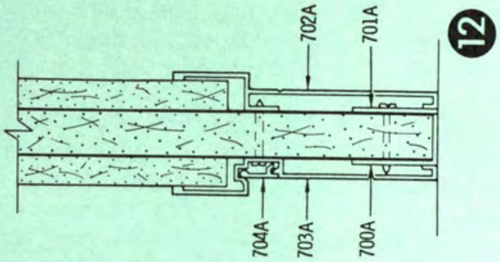
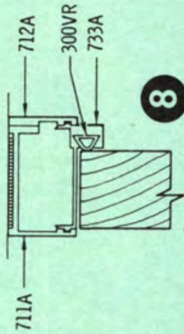
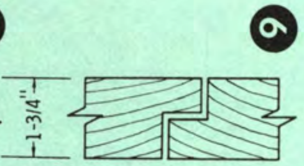


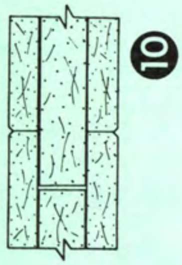
VAUGHAN WALL CH-1

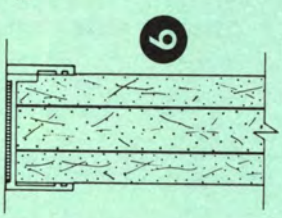


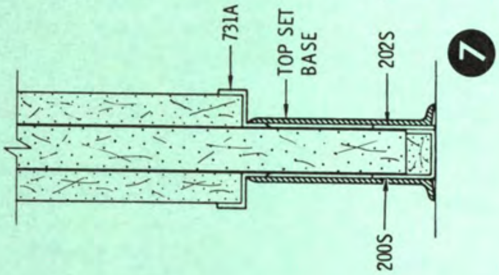


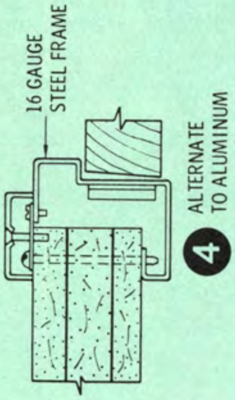


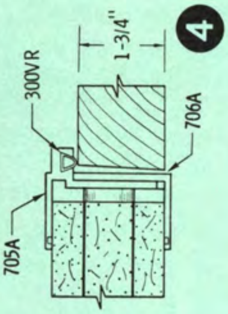


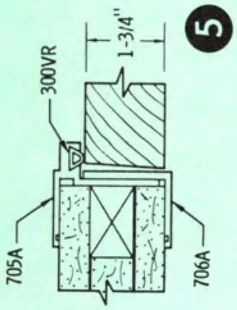


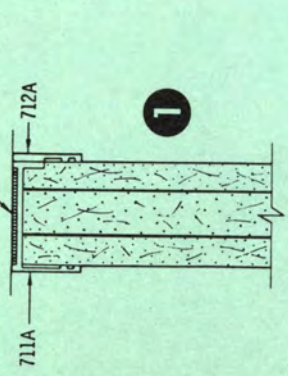


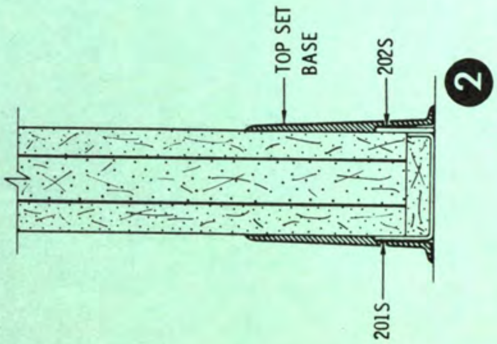












*T.M. Reg. U.S. Pat. Off.

ELEVATIONS Scale: 3/16" = 1'—0"
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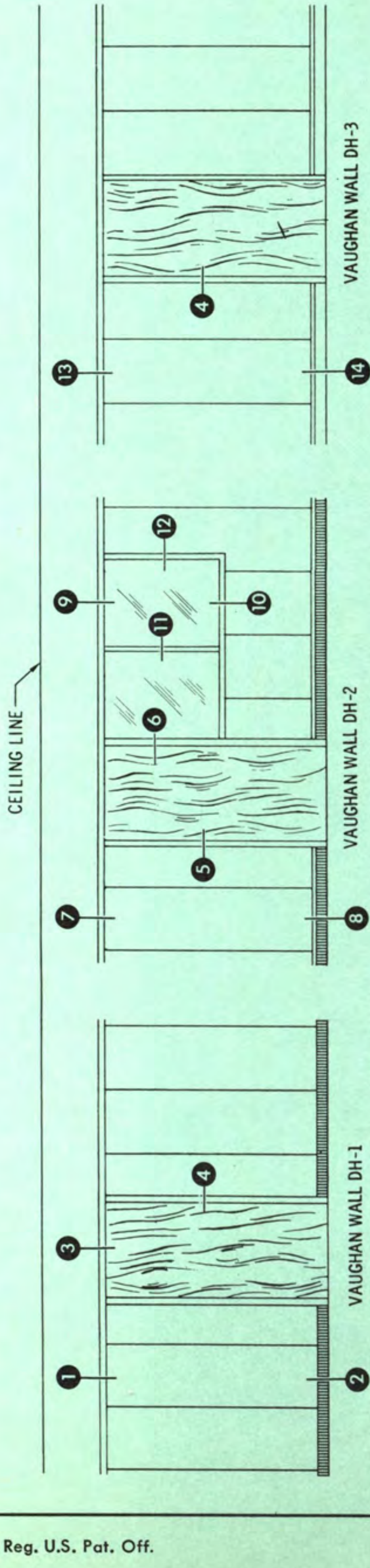

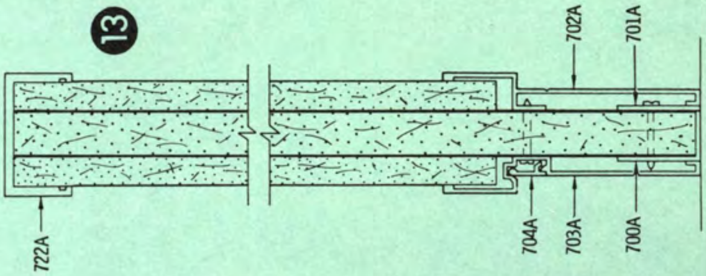

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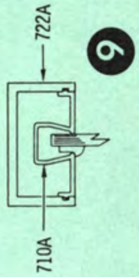

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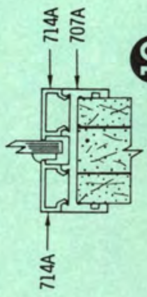

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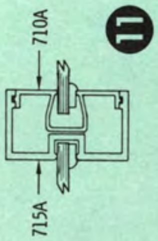

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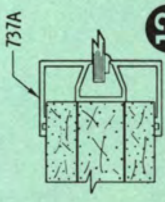

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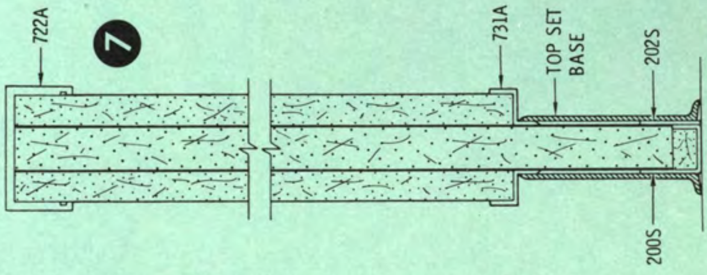

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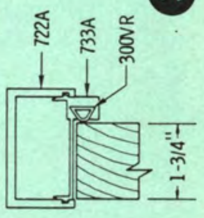

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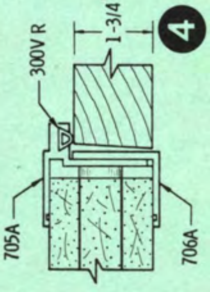

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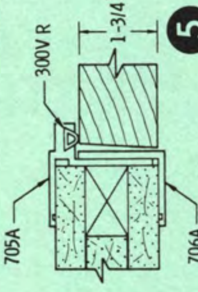

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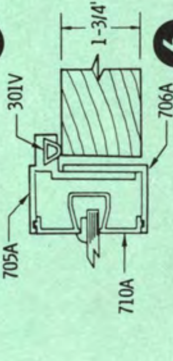

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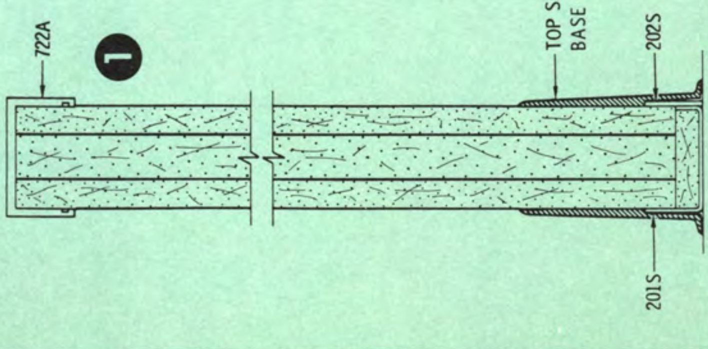


① ②

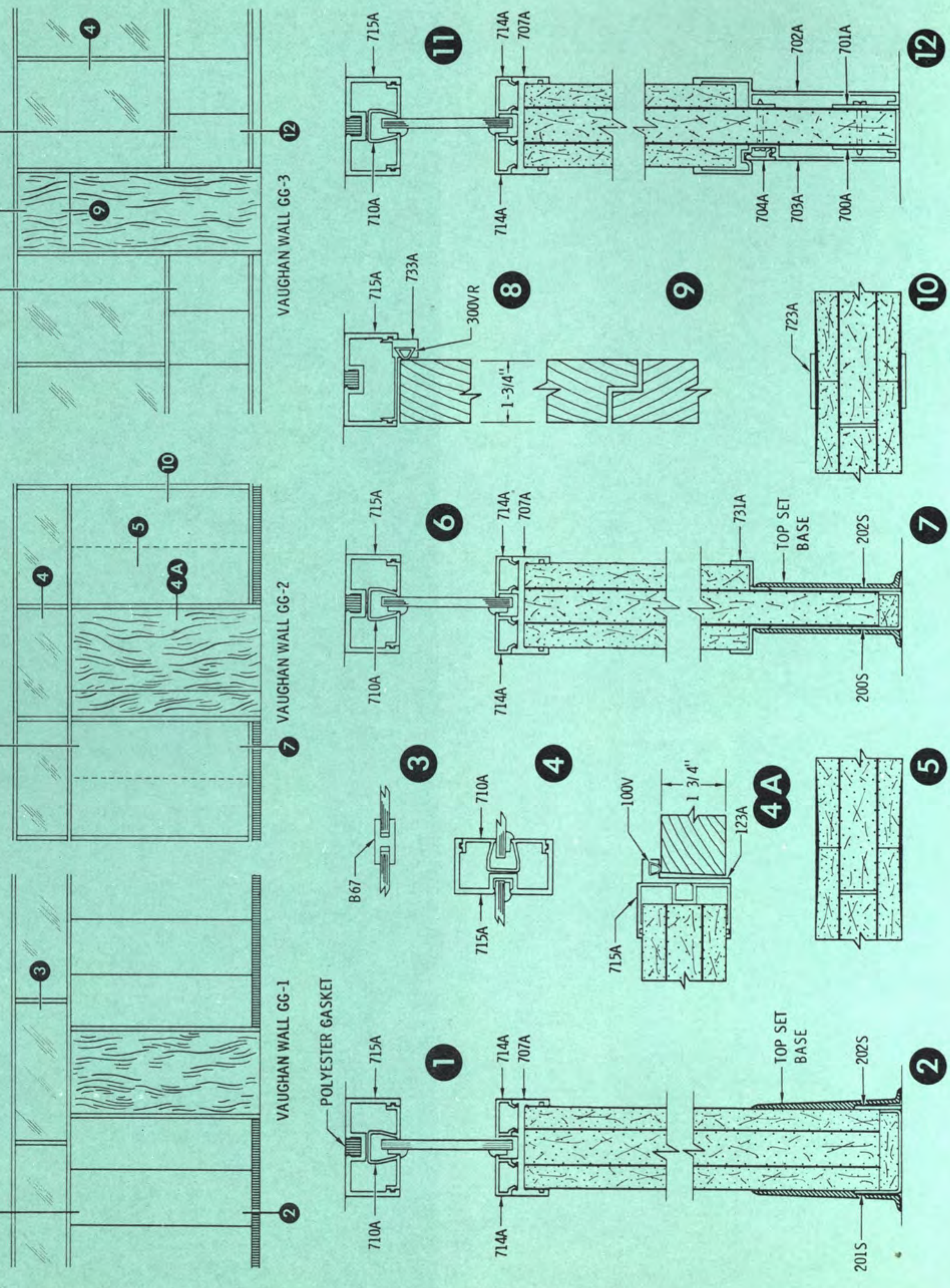
*T. M. Reg. U.S. Pat. Off.

UNITED STATES GYPSUM

VAUGHAN WALLS

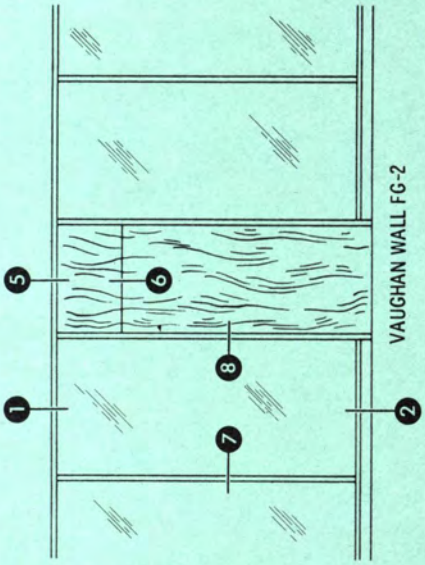
MOVABLE GYPSUM PARTITIONS

ELEVATIONS Scale: 3/16" = 1'—0"
SECTIONS Scale: 3" = 1'—0"



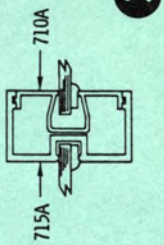
*T.M. Reg. U.S. Pat. Off

ELEVATIONS Scale: ⅜" = 1'—0"
SECTIONS Scale: 6" = 1'—0"



VAUGHAN WALL FG-2

7



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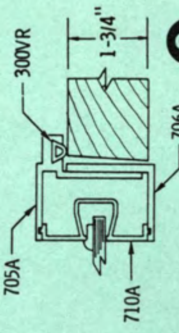

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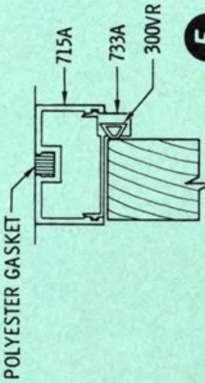

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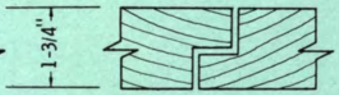
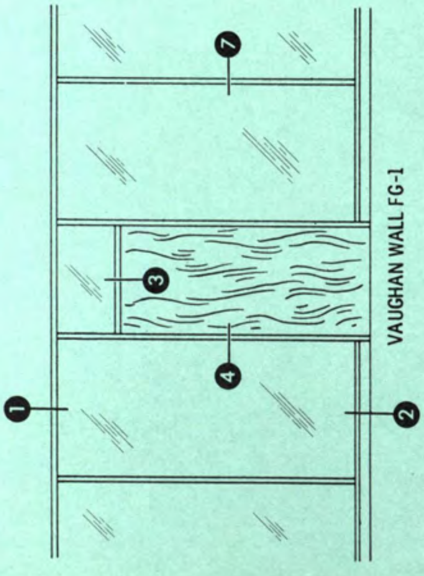
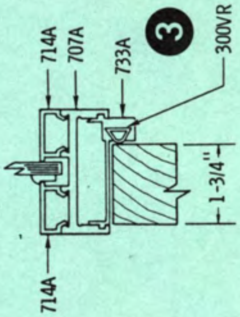




VAUGHAN WALL FG-1

3



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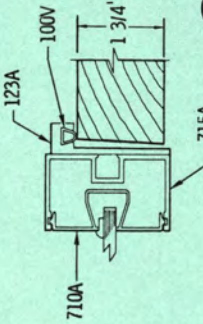

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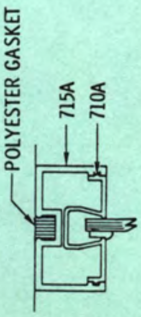

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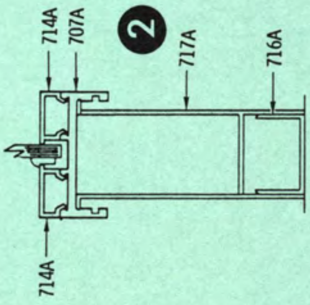
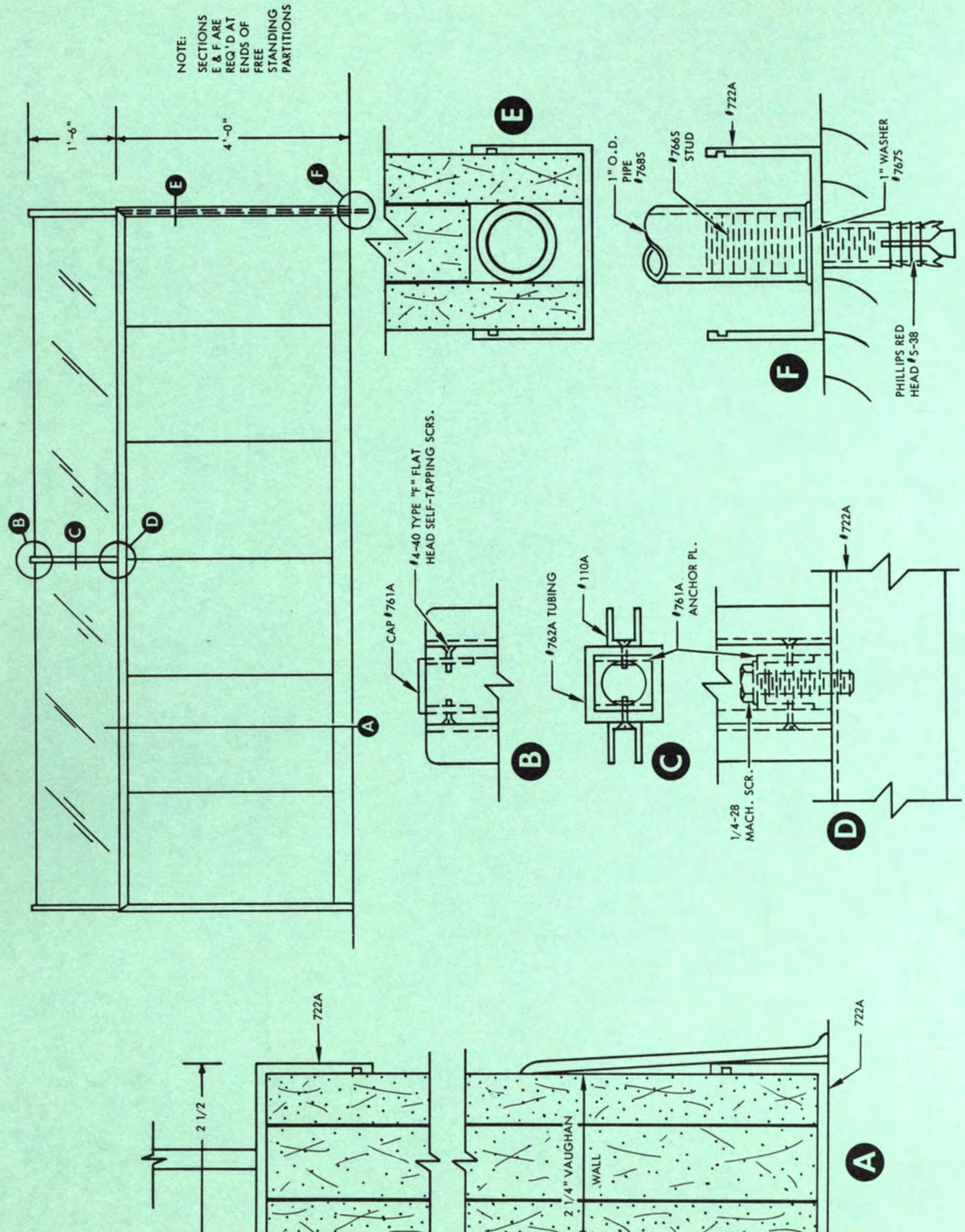


*T.M. Reg. U.S. Pat. Off.

VAUGHAN WALLS
MOVABLE GYPSUM PARTITIONS

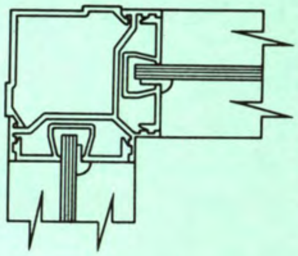
ELEVATIONS Scale: $\frac{3}{8}'' = 1'\text{—}0''$
SECTIONS Scale: $6'' = 1'\text{—}0''$

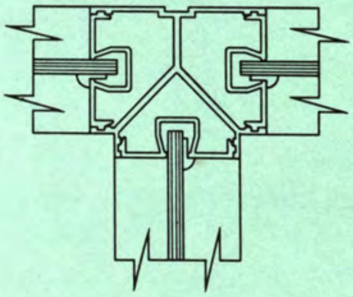


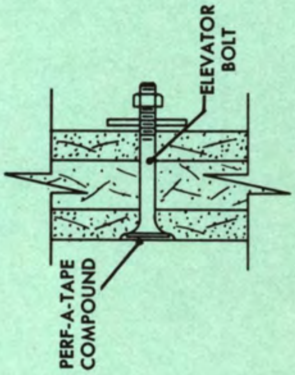
*T.M. Reg. U.S. Pat. Off

DETAILS Scale: 3″ = 1′—0″

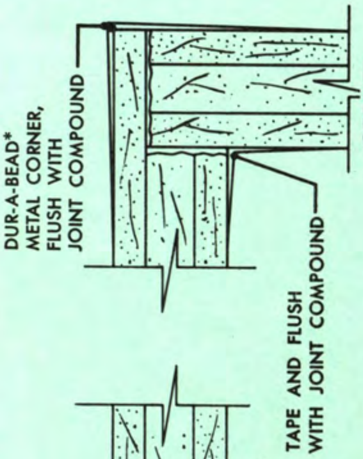
TYPICAL STANDARD DETAILS

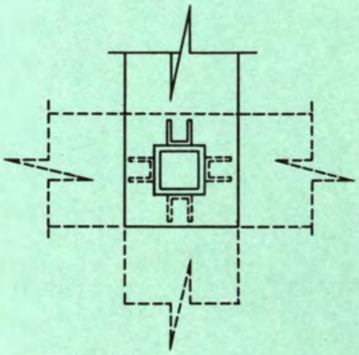

GLAZED CORNER

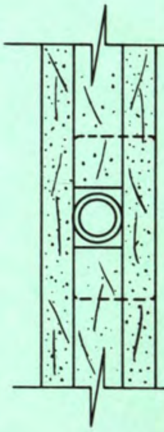

GLAZED INTERSECTION

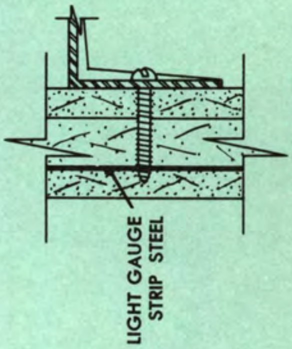


HEAVY

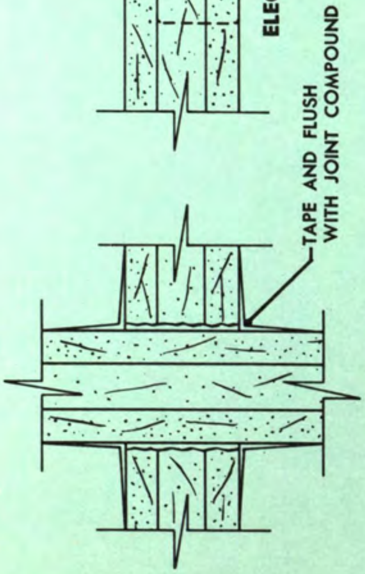

DUR-A-BEAD* METAL CORNER, FLUSH WITH JOINT COMPOUND
TAPE AND FLUSH WITH JOINT COMPOUND
CORNER


GLAZED 1, 2, 3, & 4 WAY

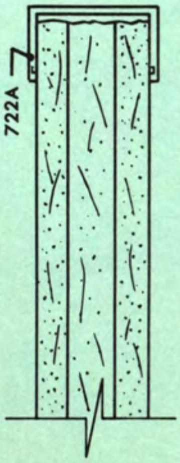

ELECTRICAL PANEL



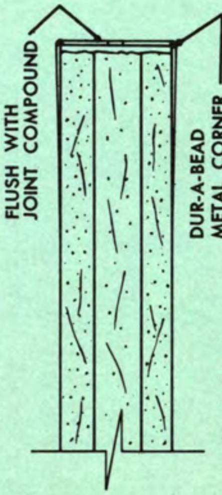
MODERATE



INTERSECTION

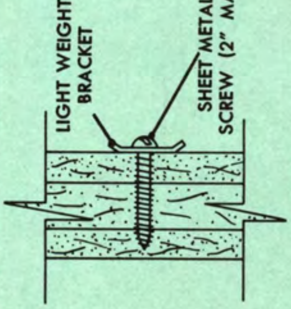


FINISHED END



TERMINAL

FIXTURE ATTACHMENTS



LIGHT

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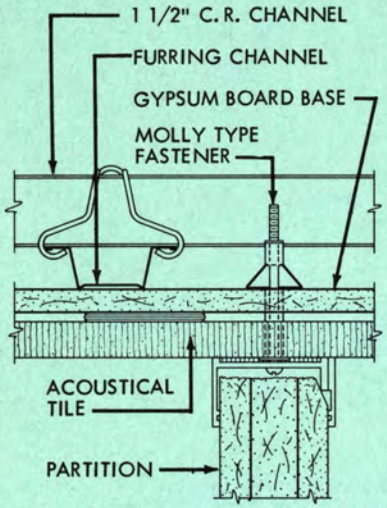
*T. M. Reg. U. S. Pat. Off.

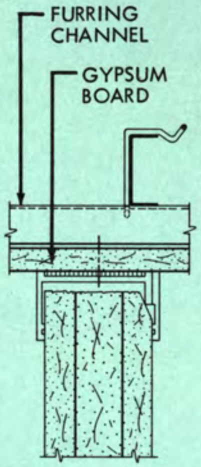
VAUGHAN WALLS
MOVABLE GYPSUM PARTITIONS

DETAILS Scale: 3" = 1'—0"

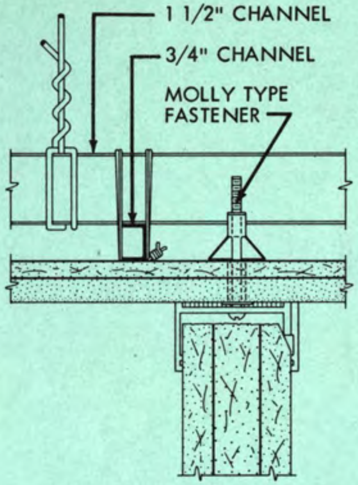
SUSPENDED CEILING ATTACHMENTS



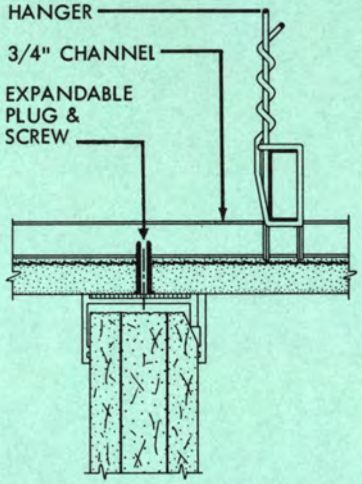
ADHESIVELY APPLIED ACOUSTICAL TILE



SUSPENDED GYPSUM BOARD

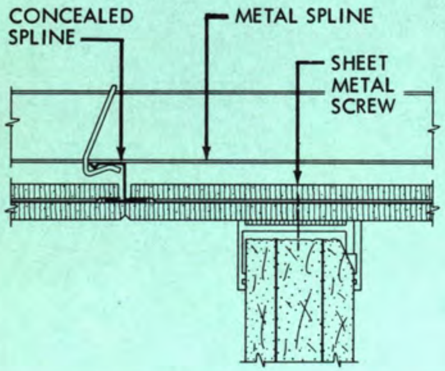


SUSP. GYPSUM LATH & PLASTER

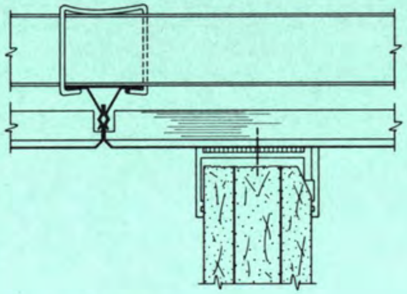


METAL LATH & PLASTER

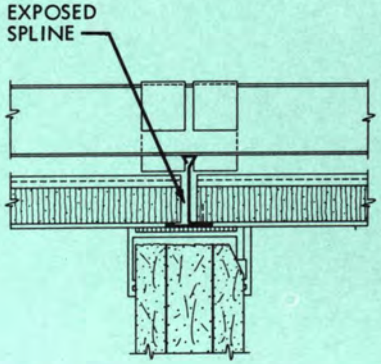
Note: Suggested attachments can be interchanged, however the attachment used should be verified with the contractor, or the ceiling system or tile manufacturer.



CONCEALED GRID SYSTEM FOR ACOUSTICAL TILE



METAL PAN CEILING



EXPOSED GRID SYSTEM FOR ACOUSTICAL TILE & BOARD

*T.M. Reg. U.S. Pat. Off

SPECIFICATIONS

***NOTE TO ARCHITECTS.** At your option, the furnishing and installations of base trim, doors, door-mutes, hardware, glass, glazing or decoration pertinent to the movable partition may be made a part of this specification. If you exercise this option, such work should be specified according to its requirements in the partition section.*

I GENERAL

All Movable VAUGHAN WALLS shall be installed by an Authorized Erector. Temperatures within the building shall be above a constant minimum of 55 degrees Fahrenheit during lamination and erection of partition panels. When required, heat shall be furnished by . . . Erection of partition panels shall not begin until erection of exterior walls and glazing or temporary covering of exterior openings provides complete protection from outside weather. Coreboard and face panels shall not be stored where they will be subjected to continuous or extreme exposure to excess moisture or temperature extremes.

II WORKMANSHIP

VAUGHAN WALLS shall be installed by skilled craftsmen under the supervision of an individual who has had on-the-job training satisfactory to VAUGHAN INTERIOR WALLS, INC. Complete partitions shall be fully movable, plumb, clean, free from defects and ready for decoration.

III SCOPE

The Authorized Erector shall furnish all labor, materials and equipment necessary to install Movable VAUGHAN WALLS in accordance with the plans and as specified herein.

IV MATERIALS

Partition panels shall be jig-laminated to form 24″ wide panels (nominal); they shall consist of VAUGHAN WALLS parts including 1″ Gypsum Coreboard faced both sides with ⅝″ FIRECODE* Gypsum Face Panels as manufactured specifically for this purpose by UNITED STATES GYPSUM. Panel thickness shall be 2¼″.

Metal Components shall be furnished by the Authorized Erector and shall comply with standards approved by VAUGHAN INTERIOR WALLS, INC.

a. Steel

(1) Floor runners shall be roll formed from paint lock type steel of not less than 18 gauge.

(2) Door frames shall be two piece hollow metal construction, fabricated of steel of not less than the following gauges:

Frames	16 gauge
Closures	14 gauge
Hinge Reinforcement	9 gauge
Strike Reinforcement	12 gauge

All door frames shall receive a factory prime coat of paint.

b. Aluminum shall be extruded from 6063-T5 alloy, anodized satin finish. Commercial tolerances shall apply. Minimum thickness shall be .125″, except (a) glazing stops which are .031″ and (b) ceiling runners and closure plates which are a combination of .094″ and .125″. Fasteners shall be aluminum, or cadmium plated, when exposed. Adhesive shall be VAUGHAN WALLS Brand Cement. FINISHING ACCESSORIES (reinforcing tape, joint finishing compound, filling compound and metal corner beads) shall be as manufactured by UNITED STATES GYPSUM Company, or equal.

V INSTALLATION

The PARTITIONS shall be accurately laid out and the floor and ceiling runners securely anchored. Such attachment shall assure complete security of the partition and future removal and relocation without excessive damage to the floor or ceiling construction.

GASKETS (foam type polyethylene or similar) shall be installed between all ceiling runners and ceiling surfaces and elsewhere as required by job conditions. Such gaskets shall be 1¼″ wide and with minimum thickness of ⅛″ for steel installations and 3/16″ for aluminum installations.

FILLER BLOCKS shall be of ⅝″ gypsum wallboard cut to size and laid in all floor runners.

PARTITION PANELS shall be formed and laminated in special jigs to insure a constant dimension at the tongue and groove. The coreboard shall be offset from the face panels to form a groove 1½″ deep. Panels shall be installed in floor and ceiling runners to form tight joints with true vertical and horizontal alignment.

DOOR AND WINDOW FRAMES shall be assembled level and plumb at locations indicated on the plans.

CLOSURE PLATES shall be screwed securely to short legs of floor and ceiling runners. Full length closure plates shall be used where practical. Cut ends shall be square and clean, fitting neatly to adjacent plates, trim, door frames, etc.

JOINT COMPOUND shall be applied to beveled joints of panels, to insure proper bridging of paint. Excess cement shall be wiped from the joint, leaving the true "V" bevel.

METAL CORNER BEAD shall be securely installed at all external corners. Not less than two coats of joint compound shall be applied over beads and each coat feathered out onto panel faces.

REINFORCING TAPE AND JOINT COMPOUND shall be applied as recommended by UNITED STATES GYPSUM to all internal corners and intersections where flush finishing is desired or metal trim is not specified.

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*T.M. Reg. U.S. Pat. Off.

• Since methods and conditions of application and use are beyond our control, the United States Gypsum Company will not be responsible for failure of its products when not used according to directions and specifications.

VAUGHAN WALLS
MOVABLE GYPSUM DRYWALL PARTITIONS

Above: Openings—anywhere . . . anytime.
Below: Mechanical services—wherever needed.

Selected by these architects and many others

ARCHITECT	JOB	CITY
Allison & Rible	Cal. Int. Telephone Co.	Bishop, Cal.
Allison & Rible	Rand Corporation	Santa Monica, Cal.
Allison & Rible	U. C. Administration Bldg.	Riverside, Cal.
Anderson, Beckwith & Haible	Travelers Insurance Bldg.	Boston, Mass.
Claude Beelman	Continental Co. Bldg.	Los Angeles, Cal.
Welton Becket & Assoc.	Texas Co. Bldg.	Los Angeles, Cal.
Bennett & Bennett	1st Western Bank & Trust	Garden Grove, Cal.
Candreva & Jarrett	Rancho San Vicente Bldg.	W. Los Angeles, Cal.
Chatelain, Gauger & Nolan	IBM Building	Bethesda, Md.
L. W. Davidson	Turco Products, Inc.	Los Angeles, Cal.
A. Epstein & Sons	Square D	Chicago, Ill.
Furniture Mart	Furniture Mart	Chicago, Ill.
Hugh Gibbs	Vandenberg Air Force Base	Lompoc, Cal.
H. L. Gogerty	Palmdale High School	Palmdale, Cal.
Edwin B. Goodell, Jr.	Rockland Atlas National Bank of Boston	Boston, Mass.
Edwin B. Goodell, Jr.	Keystone Custodian Funds	Boston, Mass.
Eggers & Higgins, Edwin Keeble	VA Regional Offices	Nashville, Tenn.
Granberry, Jackson, Jr.	Southern Bell Headquarters Bldg.	Nashville, Tenn.
Holmes & Narver Env.	Stimulation Bldg. (Navy)	Point Muga, Cal.
Hovind Hawthorne & Smith	Bothell Elementary School	Bothell, Wash.
Kistner Wright & Wright	Remington Rand	Los Angeles, Cal.
Ernest Lee	Ft. Huachuca	Tucson, Arizona
Chas. Luckman & Assoc.	IBM Bldg.	Los Angeles, Cal.
Pereira & Luckman	CBS Building	Los Angeles, Cal.
Luckman & Assoc.	Luckman & Assoc. Office	Los Angeles, Cal.
A. C. Martin	Ramo Wooldridge Corp. (6 Bldgs.)	Hawthorne, Cal.
A. C. Martin	Thompson Ramo Wooldridge (4 Bldgs.)	Canoga Park, Cal.
A. C. Martin	Barker Brothers	Los Angeles, Cal.
A. C. Martin	A. C. Martin	San Diego, Cal.
Lindsay & Maples	H. W. Brown Properties	Knoxville, Tenn.
Leonard Mosias	Stewart Hotel Offices & Shops	San Francisco, Cal.
John L. Moore Co.	Daystrom Systems	La Jolla, Cal.
Perkins & Will	U. S. Gypsum	Chicago, Ill.
Mark Pfaller & Associates	Curative Work Shop	Milwaukee, Wisc.
Chas. Polacek	Central Plaza Bldg.	Phoenix, Arizona
Richard Shelley	Collier Carbon & Chemical	Los Angeles, Cal.
Rasche, Schroeder & Spransy	American Automobile Assn.	Milwaukee, Wisc.
Smith, Powell & Morgridge	Smith , Powell & Morgridge	Los Angeles, Cal.
Harwook K. Smith	Davis Building Co.	Dallas, Texas
Douglas Stone	First Western Bldg.	San Francisco, Cal.
Douglas Stone	Peninsula Hospital	Burlingame, Cal.
Henry Sylvestri	Orbach Bldg.	Los Angeles, Cal.
Thormin Haynes & Assoc.	Huntington Memorial Hospital	Pasadena, Cal.
Thorman & Baynes	Young Electric Bldg.	Los Angeles, Cal.
Scott & Beecher	Empire Bldg.	Salt Lake, Utah
Slack W. Winburn	Surety Life Insurance Co.	Salt Lake City, Utah

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UNITED STATES GYPSUM—The Greatest Name in Building

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(CLEVELAND HEIGHTS)
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DETROIT, MICH.
(SOUTHFIELD)
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GRAND RAPIDS, MICH.
HARRISBURG, PA.
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LOUISVILLE, KY.
MADISON, WISC.
MEMPHIS, TENN.
MIAMI, FLORIDA
(NORTH MIAMI)
MILWAUKEE, WISC.
MINNEAPOLIS, MINN.
NEWARK, N.J.
(CLIFTON)
NEW HAVEN, CONN.
(HAMDEN)
NEW ORLEANS, LA.
NEW YORK, N.Y.
(NEW YORK CITY)
(SCARSDALE)
OKLAHOMA CITY, OKLA.
OAKLAND, CALIF.
(SAN LEANDRO)
OMAHA, NEBR.
PATERSON, N.J.
(WAYNE)
PEORIA, ILL.
PHILADELPHIA, PA.
(BRYN MAWR)
PHOENIX, ARIZ.
PITTSBURGH, PA.
PORTLAND, ORE.
PROVIDENCE, R.I.
(WARWICK)
RALEIGH, N.C.
RICHMOND, VA.
SACRAMENTO, CALIF.
ST. LOUIS, MO.
SALT LAKE CITY, UTAH
SAN ANTONIO, TEXAS
SAN DIEGO, CALIF.
SAN FRANCISCO, CALI
SEATTLE, WASH.
SYRACUSE, N.Y.
(DE WITT)
TAMPA, FLA.
WASHINGTON, D.C.
(ARLINGTON, VA.)

A.I.A. File 35-H-6

TECHNICAL INFORMATION

E-Z WALL

MOVABLE PARTITIONS

UNITED STATES GYPSUM

1964

A.I.A. File 35-H-6

E-Z WALL
MOVABLE PARTITIONS

simplified planning, construction and relocation

The E-Z Wall "Simplicity" design offers the best and fastest solution to space control problems in offices, commercial buildings and institutions.

In contrast to other movable partition systems that require up to 350 separate parts, E-Z Wall has less than 30 parts! Basic components are multi-purpose and fully modular. This modular construction simplifies layout, eliminates the need for special panels and fillers, and permits on-the-job adaptation with a minimum of cutting.

E-Z Wall partitions are as attractive and serviceable as permanent installations. They are made of strong, incombustible laminated gypsum board, held in place by open web steel studs that provide raceways for service wiring and piping. E-Z Wall partitions are always reusable, and may be relocated easily when space requirements change.

When you have a space control problem, consult your local USG Architect Service or Industrial Sales representative.

E-Z Wall layout, and estimates for initial installations, additions or relocations will be furnished by the USG Partition Contractor without obligation.

DESCRIPTION

E-Z Wall partitions are flush-panel-type, 3⅜″ thick. Each panel consists of two pieces of ⅜-inch thick gypsum board, mill-laminated to form a ¾-inch thick sheet in standard form ready for paint application following standard painting procedures. A roll-formed H-shaped stud holds the panels in place (flanges of stud slip into the lamination of the panel). Partition units are erected on a simple hat-shaped, continuous floor runner. Ceiling-height partitions are inserted into a ceiling runner. Openings for windows and door frames are standard extruded aluminum sections. (See diagram.)

Sizes and Types

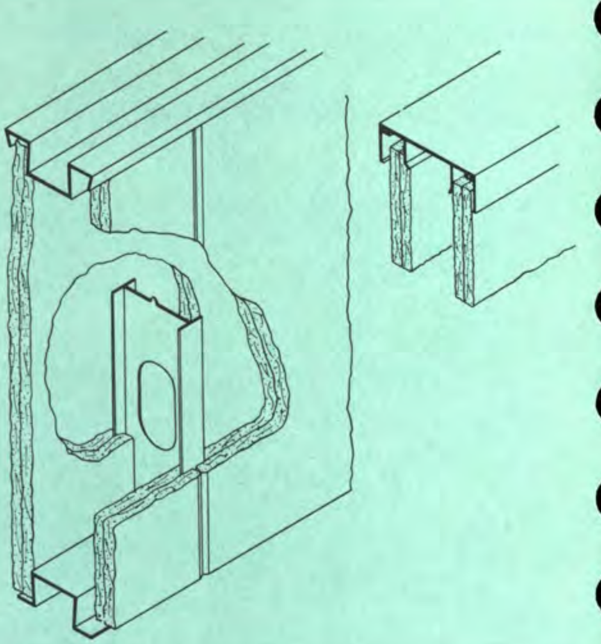
Railing Height Partitions available up to 48″ in height. May be furnished with a finished rail cap or with glass above the rail.

Cornice and Ceiling Height Partitions available to a maximum of 10′. May be furnished solid, with windows, or in continuous glass variations. Window sizes are fully flexible in both height and width without the use of special parts.

FUNCTION AND UTILITY

Flexibility

Multi-purpose, modular parts are used in all types of partitions (no special panel sizes or fillers are necessary). Railing heights, window sizes, and door sizes may be revised on the job without special parts or extensive labor.



Sound Control

E-Z Wall construction, exclusive of openings, provides a average sound transmission loss of 36 decibels as tested at Riverbank Acoustical Laboratories.

Fixtures

Open-web steel studs provide ample raceways for wiring. Outlets may be cut into panel and located for convenience. Wall-hung fixtures—lights, chalkboards, and other lightweight fixtures may be attached directly to panels.

Fire Resistance

All materials in E-Z Wall partitions—gypsum board, steel structural members, aluminum trim—are incombustible.

Maintenance

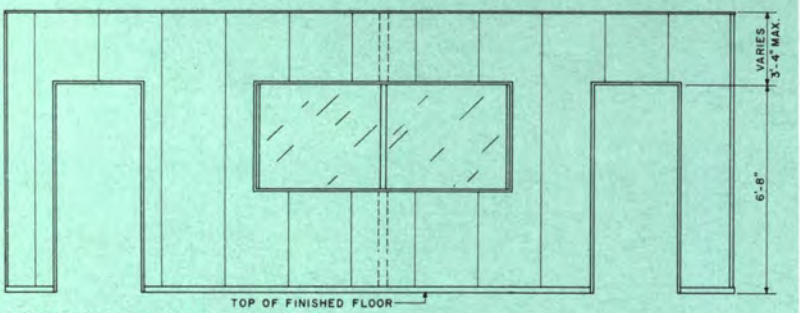
All exposed aluminum members are etched and anodized to provide a neutral gray finish that requires little maintenance.

LIMITATIONS OF USE

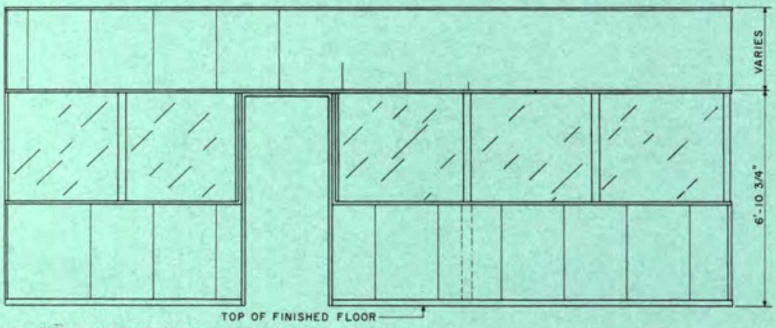
1. E-Z Wall partitions should not be used as load-bearing members, or where they are exposed to excessive moisture. Do not use floor runners as a partition door frame or terminal insert.
2. Panels are available nationwide in 7′, 9′, and 10′ lengths. For other than standard size panels that are available, consult your local representative.
3. Limiting unrestrained length between supports of Cornice Height and Bank Rail Partitions, including Cornice Height Partitions with door openings joined by continuous Top Rail shall not exceed 14′0″

In certain areas where seismic design code requirement govern, consult local building codes for Partition limitations.

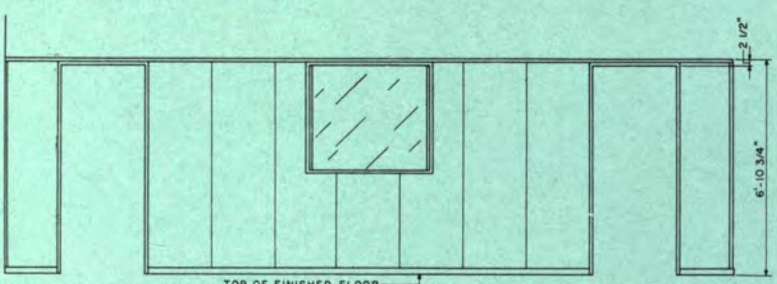
details sections and elevations/no scale



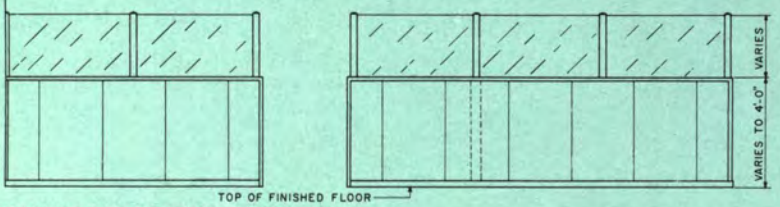
CEILING HEIGHT WALL ELEVATION



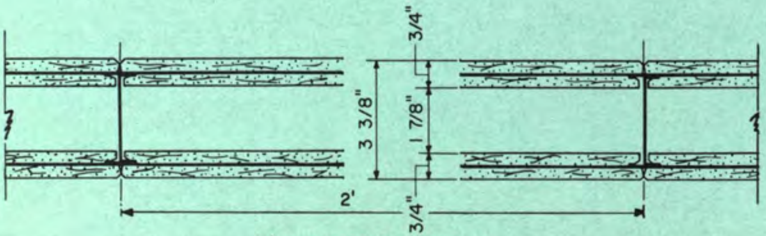
GLAZED HEIGHT WALL ELEVATION



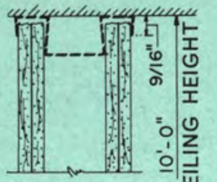
CORNICE HEIGHT WALL ELEVATION



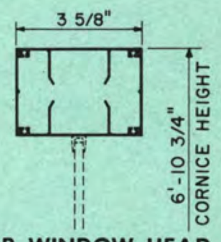
RAILING HEIGHT WALL ELEVATION



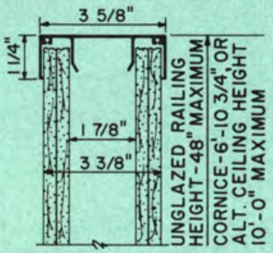
2′ MODULAR PANEL



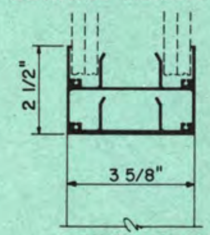
CEILING CONNECTION



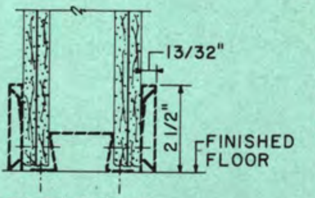
DOOR OR WINDOW HEAD CORNICE HEIGHT


3 5/8"
1 1/4"
1 7/8"
3 3/8"
UNGLAZED RAILING HEIGHT-48" MAXIMUM
CORNICE-6'-10 3/4" OR ALT. CEILING HEIGHT 10'-0" MAXIMUM

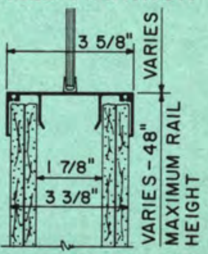
CORNICE OR RAIL CAP



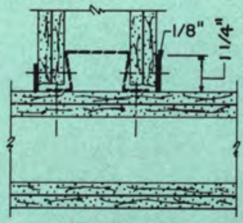
DOOR HEAD GLAZED PARTITION



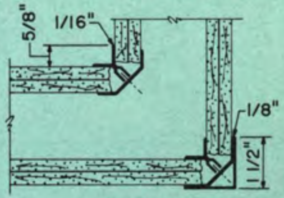
BASE DETAIL



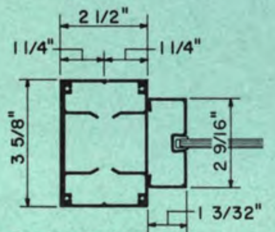
WINDOW SILL



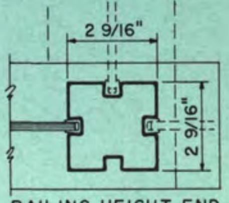
PARTITION "T" WALL



CORNER POST ASSEMBLY

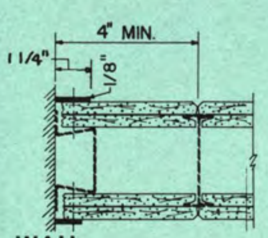


DOOR-WINDOW JAMB

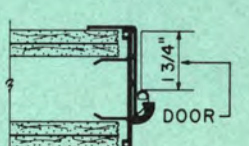


RAILING HEIGHT END POST—PARTITION CORNER AND TEE INDICATED

GLAZING POST



WALL INTERSECTION



DOOR FRAME DETAIL

• Since methods and conditions of application and use are beyond our control, the United States Gypsum Company will not be responsible for failure of its products when not used according to directions and specifications.

E-Z WALL
MOVABLE PARTITIONS

SPECIFICATIONS

The most expedient way to obtain any additional information regarding (fire, sound, etc.) test data in this publication is to direct inquiries to: **UNITED STATES GYPSUM**

scope

Furnish and erect E-Z Wall partitions as indicated on the plans and specified hereunder. Partitions are to be flush-panel-type, 3⅜″ thick, (railing, cornice, and/or ceiling height) as supplied by the United States Gypsum Company.

shop drawings

Shop drawings showing layout and details of construction, when required, shall be submitted for approval.

materials

A. Laminated gypsum board panels shall be ¾″ thick by 24″ wide by appropriate height. The panels shall have accurately formed off-set edges for concealed attachment to steel studs.

B. Steel studs shall be open web type, formed from 23-gauge electro-galvanized steel.

C. Floor runners (and ceiling runners in ceiling height partitions) shall be formed from 23-gauge electro-galvanized steel. Floor and ceiling runners shall have formed-in spacers to hold panels in alignment. (Ceiling runners shall have integral trim to conceal top edges of panels.)

D. Base trim shall be 18-gauge, 2½″ high, with $^{7}/_{16}$″ projection. Base trim shall be snapped on over 18-gauge base trim clips, provided at maximum spacing of 24″.

E. Door frames shall be formed of an extruded aluminum door buck and an extruded aluminum insert. Door bucks shall provide a finished opening into which an insert is fitted to provide door stops and hardware mortises. Wood doors, furnished by partition contractor, shall be 1⅜″ or 1¾″ thick by appropriate width up to 3′0″ by 6′8″ high. Continuous removable plastic strikes shall be provided for quiet operation of doors and to lessen sound transmission.

F. Door hardware consisting of (three 4½″ by 4½″ butts for 1¾″ thick doors) (two 4″ x 4″ butts for 1⅜″ thick doors) and key-in-knob lock shall be furnished in US 28 finish by the door supplier.

G. Window frames shall be of sizes indicated on the plans and shall be built up from standard extruded aluminum parts. Glass shall be furnished by the partition contractor and shall be set in plastic glazing channels colored to match the window frame.

finish

A. Laminated gypsum board panels shall be supplied with a manila-finished paper surface ready for field decoration. (If painting is to be part of the partition work, include complete painting specifications.)

B. Exposed aluminum members shall be etched and anodized to provide a permanent finish of neutral gray color.

installation

Lay out the partition and locate all floor attachment clips for end posts and door frames. Floor runners and floor attachment clips shall be securely anchored to the floor. Assemble and install cornice and/or rail and/or ceiling runner. Install gypsum board panels, studs, and trim members in accordance with U.S.G. installation methods.

workmanship

The finished partition shall be rigid, plumb, with horizontal lines leveled; neat in appearance, and free from defects in workmanship. All connections to walls, floors, ceilings, cornice sections, and connections between gypsum board panels shall be concealed. If doors are hung by the partition contractor, hardware shall be adjusted to proper working order.

UNITED STATES GYPSUM—The Greatest Name in Building

GENERAL OFFICES • 101 SOUTH WACKER DRIVE • CHICAGO 6, ILLINOIS

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CHICAGO, ILL.
CINCINNATI, OHIO
CLEVELAND, OHIO
(CLEVELAND HEIGHTS)
COLUMBUS, OHIO
DALLAS, TEXAS
DENVER, COLO.
DETROIT, MICH.
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(NORTH MIAMI)
MILWAUKEE, WISC.
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(CLIFTON)
NEW HAVEN, CONN.
(HAMDEN)
NEW ORLEANS, LA.
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(NEW YORK CITY)
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OKLAHOMA CITY, OKLA.
OAKLAND, CALIF.
(SAN LEANDRO)
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PEORIA, ILL.
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(BRYN MAWR)
PHOENIX, ARIZ.
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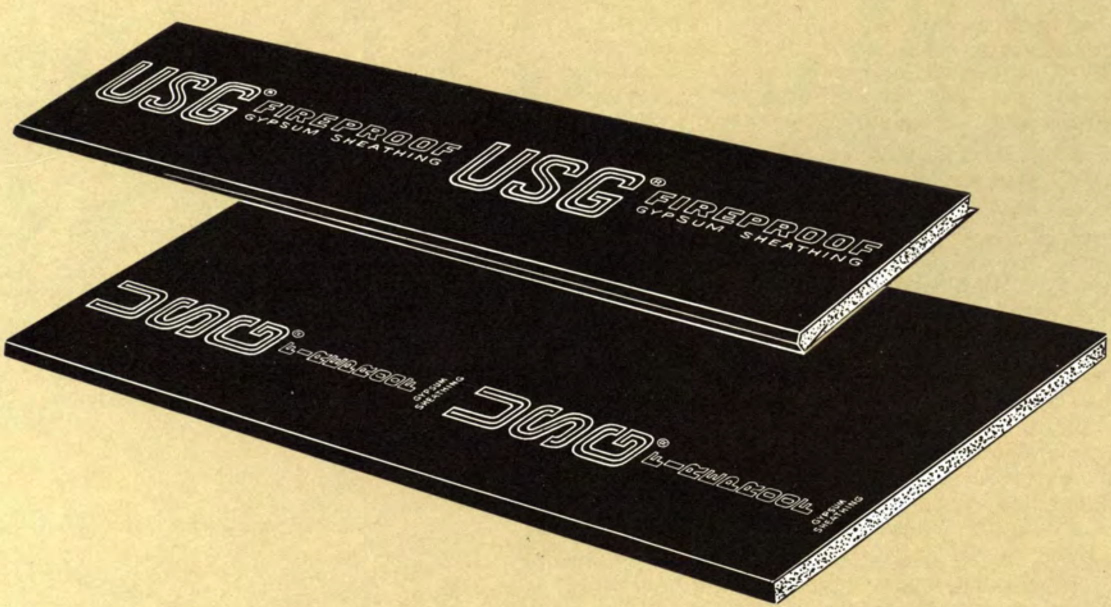
PROVIDENCE, R.I.
(WARWICK)
RALEIGH, N.C.
RICHMOND, VA.
SACRAMENTO, CALIF.
ST. LOUIS, MO.
SALT LAKE CITY, UTAH
SAN ANTONIO, TEXAS
SAN DIEGO, CALIF.
SAN FRANCISCO, CALIF.
SEATTLE, WASH.
SYRACUSE, N.Y.
(DE WITT)
TAMPA, FLA.
WASHINGTON, D.C.
(ARLINGTON, VA.)

Aluminum Components: ELECTRO-NETIC STEEL, INC., SCHILLER PARK, ILLINOIS

A.I.A. File 19-D-3

TECHNICAL INFORMATION

USG® SHEATHING


USG® FIREPROOF GYPSUM SHEATHING
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USG® FIREPROOF GYPSUM SHEATHING

UNITED STATES GYPSUM
The Greatest Name in Building
General Offices: 300 West Adams St., Chicago 6, Ill.

1961

A.I.A. File 19-D-3

USG* SHEATHING

DESCRIPTION

USG Sheathing is a fireproof gypsum sheathing material. It is made in large unit sheets ½″x2′x8′ and ½″x4′x8′, 9′ with a water-resistant gypsum core containing an emulsified asphalt and enclosed in a specially treated, water-repellent, heavy black paper. The long edges are V-tongued and grooved on 2′x8′ and square on 4′x8′, 9′.

FUNCTION AND UTILITY

Fireproof—The gypsum core is incombustible and will not transmit high temperatures until completely calcined—a slow process.

Resistance to Weather and Moisture—The gypsum in the core is thoroughly inter-mixed with asphalt type emulsion and the tough paper covering is given a special water-repellent treatment. This combination provides an amazing resistance to weather and makes possible open storage on the job, and exposure on the framing during construction without appreciable loss of structural value. No harmful warping or buckling.

USG Sheathing is designed to permit escape of water vapor that may penetrate the stud space. (See technical data for vapor permeability.)

Adds Structural Strength—Wet or dry, USG Sheathing provides unusual lateral bracing to the frame. (See technical data.)

Wind-Tight Joints—The precision formed, interlocking V-tongue and groove edges snugly fitted, minimize wind infiltration. With 4′x8′ vertically applied, edge joints abut on centers of supports.

Economical

a. Low material cost.
b. Full dimension—no face loss.
c. Minimum of waste.
d. Fast application—up to 1000 sq. ft. can be applied in eight hours.
e. Eliminates building paper except where required by local building regulations.

Compliance—USG Sheathing complies with the following standard specifications for gypsum sheathing board:

Federal Specification SS-S-276.

American Society for Testing Materials Standard Specification for Gypsum Sheathing Board, A.S.T.M. Designation—C79.

USG Sheathing 4′x8′, 9′ is designed to meet FHA Circular 12 requirements for use without corner bracing.

LIMITATIONS OF USE

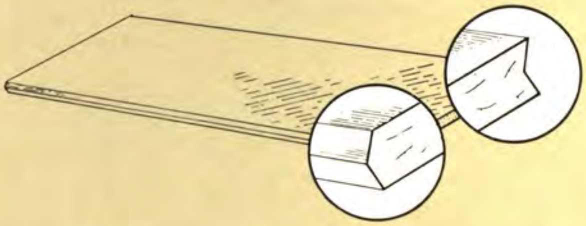
1. USG Sheathing is not to be considered as a vapor barrier.

2. Maximum Stud Spacing—USG Sheathing 2′x8′ is designed for use on stud spacing up to and including 24″ o.c.; 4′x8′, 9′, up to 16″ o.c.

3. Attachment of Exterior Finishes—Wood siding, wood furring strips, stucco mesh, wall ties, etc., shall be secured to the framing members by nailing through the USG Sheathing.

4. USG Sheathing is not recommended as a base for adhesive application of acoustical tile; use ½″ T&G Baxbord Backing Board. Where a one hour fire-rated acoustical tile base is required, use ⅝″ Baxbord Firecode Gypsum Backing Board, on open web steel joist—concrete floor construction. Refer to Sheetrock* Wallboard AIA File Number 23-L, Baxbord Backing Board section.

Tongue and Groove Edges (2′ x 8′)



USG Sheathing 2′x8′ being applied to wood frame house

USG 4′ x 8′ Sheathing (Sq. Edge)

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*Trademark Reg. U. S. Pat. Off.

"USG" "SHADOW-LOCK" "SHEETROCK" "FIRECODE" and "BAXBORD" are registered trademarks owned by United States Gypsum and used by it to distinguish its products. "USG" identifies the particular gypsum board sheathing, "SHADOW-LOCK" identifies the particular attachment system for asbestos shingles, "SHEETROCK", "BAXBORD" and "FIRECODE" identify the p[illegible]ular gypsum board manufactured only by United States Gypsum.

APPLICATIONS

General—USG Sheathing is an excellent base for wood siding . . . brick veneer . . . stucco . . . wood or asbestos siding shingles. Besides being the finest sheathing for housing, it can be used, exposed to the weather, as an economical siding for farm buildings . . . tobacco barns . . . and other buildings, where a decorative exterior finish is not required. USG Sheathing may be painted after six months exposure to the weather.

32″-48″ Asbestos Cement Siding Shingles. 32″ and 48″ Asbestos siding shingles may be applied directly over USG Sheathing by nailing asbestos through sheathing into framing members.

Panel type Wood Shake Siding. Panel type wood shake sidings, such as Shakertown, GLUMAC, mfrd. by Perma Products Co., Cleveland, Ohio, and SHAKE-A-PLY, mfrd. by the SHAKE-A-PLY Co., N. Portland, Ore., may be applied over USG Sheathing in accordance with the recommendations of the siding manufacturer.

SHADOW-LOCK* ATTACHMENT SYSTEM

Description—USG SHADOW-LOCK Attachment System is a means of attaching standard size asbestos cement siding directly over USG Sheathing with precision-made aluminum channels and corner pieces. This method of attachment creates a striking deep shadow line not obtainable with regular nail on attachment, minimizes shingle breakage because nails do not penetrate the siding, and is economical because it is self-aligning and uses 5% less siding.

TECHNICAL DATA

1. Strength to Resist Lateral Distortion—Comparative tests were conducted in USG Research Laboratories and attested by Phil C. Huntly, Consulting Engineer. Tested dry, USG Sheathing applied to an 8′x8′ panel of 2″x4″ framing on 16″ centers had a lateral distortion of .498″ under a racking load of 1850 lbs.

A similar panel was subjected to the equivalent of 5½ years of average United States rainfall in a giant "weatherometer" and with the same load of 1850 lbs. the distortion was only 1.125 inches.

Under this same load a similar frame sheathed with 1″x8″ dry wood sheathing resulted in a distortion of 10.312 inches.

2. Insulation—For ½″ USG Sheathing the thermal conductance is 2.86 and thermal resistance is 0.35.

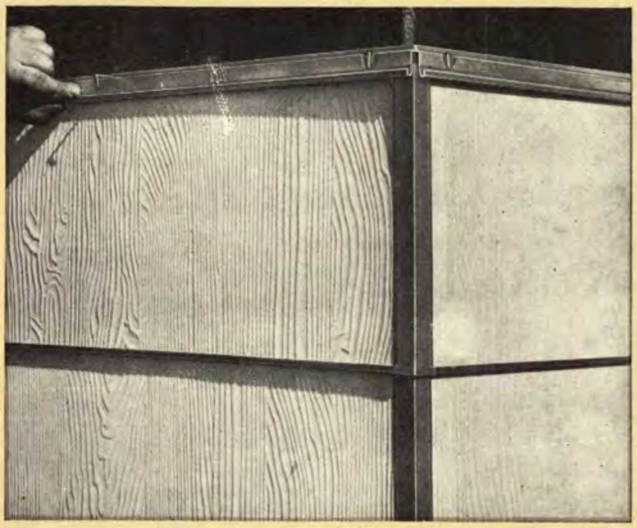
3. Vapor Permeability—USG Sheathing has an average permeability of 27.3 perms. (One perm equals 1 grain per sq. ft. per hour per inch of mercury vapor pressure difference.)

Gypsum Sheathed Panels Without Corner Bracing

(1) Results of Racking Study of ½ in. Thick 4′x 8′ USG sheathing

Condition	At 1200 lb. Load		At 2400 lb. Load		Maximum Load lb.
	Deflection In.	Set In.	Deflection In.	Set In.	
DRY	.089	.016	.230	.107	6000
WET	.093	.032	.278	.130	4530

(1) Based on averages of three panels tested at a nationally recognized testing laboratory.



Application of USG SHADOW-LOCK Attachment System

A Finished Home on which USG SHADOW-LOCK System was used

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*T. M. Reg. U. S. Pat. Off.

USG SHEATHING

SPECIFICATIONS FOR USG SHEATHING

NOTE TO ARCHITECT

1. Federal and A.S.T.M. Specifications—USG Sheathing complies with Federal Specifications for Gypsum Sheathing Board. SS-S-276 and American Society for Testing Materials Standard Specification for Gypsum Sheathing Board, A.S.T.M. Designation—C79.

SCOPE

Unless otherwise shown on plans, all exterior walls shall be sheathed in accordance with these specifications.

MATERIALS

Sheathing shall be USG Sheathing as manufactured by the United States Gypsum Company, ½"x24"x8'0" or ½"x48"x8'0", 9'0".

Nails shall be 11-gauge galvanized, 7/16" head diameter, 1½", or 1¾" long roofing nails.

Staples shall be 16 gauge galvanized divergent point, nominally ½" wide, 1½" long.

APPLICATION

Apply USG Sheathing 2'x8' with the long dimension across the supports and with the groove edge down interlocking the tongue and groove edges. Ends of sheets shall abut over centers of supports, and all end joints shall be staggered. Fit snugly around all window and door openings.

Apply USG Sheathing 4'x8' or 9' with the long dimension parallel to the supports. Edges of the sheets shall abut over centers of supports. Fit snugly around all window and door openings.

ATTACHMENT

Nail USG Sheathing 2'x8' shall be nailed 8" o.c. to studs (4 nails per 2' width per stud) when either the application of the exterior finish following sheathing application provides supplemental nailing through the sheathing into the studs or diagonal bracing is installed. Otherwise, gypsum sheathing shall be nailed 4" o.c. to studs (7 nails per 2' width per stud).

USG Sheathing 4'x8' or 9' shall be nailed 4" o.c. around the entire perimeter of the board and 8" o.c. on intermediate framing members.

Staple USG Sheathing 2'x8' shall be stapled 8" o.c. to studs (4 staples per 2' width per stud) when either the application of the exterior finish following sheathing application provides supplemental nailing through the sheathing into the studs or diagonal bracing is installed. Otherwise, gypsum sheathing shall be stapled 4" o.c. to studs (7 staples per 2' width per stud). Staples shall be driven parallel to the long dimension of the framing members. Staple head shall be driven flush to the sheathing surface and shall not break through sheathing paper.

OPTIONAL INCLUSIONS

1. Wood Siding Over USG Sheathing

Apply siding directly over USG Sheathing, securing it with nails driven through sheathing and into studs. Nails shall have a minimum penetration of 1¼" into the studs. End joints of siding shall be over center of studs.

2. Masonry Veneer Over USG Sheathing

Masonry ties shall be attached with nails driven through the sheathing and into the studs, using nails of sufficient length to penetrate 1¼" into the studs. (At least 6d common nails.) Ties shall be spaced vertically to conform with coursing of masonry veneer.

3. Stucco Over USG Sheathing

Stucco may be applied over USG Sheathing by the use of USG Stuccomesh applied with stucco furring nails providing at least 1⅛" penetration into studs. See Sweet's catalog or AIA file 20-B.

SPECIFICATIONS FOR USG SHADOW-LOCK ATTACHMENT SYSTEM (Short Form)

SCOPE

Unless otherwise shown on plans standard size straight edge asbestos cement siding shingles shall be applied to all exterior walls over gypsum sheathing and held in place by means of the USG SHADOW LOCK Attachment System.

MATERIALS

Channels shall be USG SHADOW-LOCK Channels as manufactured by the United States Gypsum Company.

Corners shall be USG SHADOW-LOCK Corners 11½" long as manufactured by the United States Gypsum Company.

Nails shall be USG SHADOW-LOCK Nails 12 gauge galvanized 1¾" long with a diamond point and ⅝" hook head.

APPLICATION

The channels, corners and straight edge asbestos shingles shall be applied and secured in strict accordance with the recommendations of the manufacturer of the attachment system.

A.I.A. File 37-B
37-C

TECHNICAL INFORMATION

USG* MINERAL FIBER INSULATION PRODUCTS

UNITED STATES GYPSUM

1962

*T.M. Reg. U.S. Pat. Off.

A.I.A. File 37-B
37-C

THERMAFIBER*
INSULATING WOOL

DESCRIPTION

THERMAFIBER Insulating Wool consists of spun mineral fibers mechanically formed either into a uniform mat of definite dimensions and controlled density or into a uniform pellet form suitable for pouring or blowing into framing spaces.

THERMAFIBER Regular Insulating Wool Blankets—Are enclosed, except for mill cut ends. One side of the mat is enclosed in strong asphalted paper, an effective vapor barrier, extending well beyond the edges of the wool to form strong flanges for easy and secure attachment. The breather side is completely enclosed in a durable, fire-resistant, porous kraft paper. See table below for sizes.

THERMAFIBER Open Face Insulating Wool Blankets—Open face blankets have the same general characteristics as regular blankets except that the paper on the breather side is omitted. See table below for sizes.

THERMAFIBER Reflective Insulating Wool Blankets—Foil Both Sides—Both the vapor barrier and breather sides are covered with genuine aluminum foil. The vapor barrier side is a solid surface of aluminum foil giving one of the most effective known vapor-barrier surfaces. The foil on the breather side is perforated to allow the breathing of the mineral wool fibers and minimize vapor traps in walls and ceilings. The reflective surfaces provide the added factor of reflecting up to 95% of radiant heat. The reflective surface must always be exposed to an air space of no less than ¾″ to achieve maximum insulation value. We do not recommend 3″ thick blankets reflective on two sides for the sidewalls, since the normal stud space would not allow a ¾″ air space parallel to *each* reflective side. See table below for sizes.

THERMAFIBER Reflective Insulating Wool Blankets—Foil One Side Only—Are enclosed blankets with genuine aluminum foil on one side (one reflective surface). Blankets are available with either foil vapor barrier and regular breather paper or regular vapor barrier and perforated foil breather paper. See table below for sizes.

THERMAFIBER Reverse Flange Insulating Wool Blankets—Are a specialized product for application from the exterior side of the framing members. It has the same characteristics as Regular Blankets except that the stapling flanges extend from the breather side to permit proper installation of the vapor barrier toward the warm side of the room.

THERMAFIBER Blowing Wool—Consists of mineral wool fibers formed into pellets for installation by pneumatic machine.

THERMAFIBER Pouring Wool—Consists of mineral fibers formed into pellets for pouring and spreading by hand. Wool is packaged in lightweight bag for easy handling.

FUNCTION AND UTILITY

High Thermal Resistance—Conductance "k" Factor is 0.27 per inch thickness and Resistance 3.70 per inch thickness. See Product Data for Resistance for given thicknesses.

Noncombustible—The mineral fibers will not burn or support combustion.

Resistance to Vapor Transmission—The aluminum foil surface of the asphalted paper resists the passage of water vapor and protects against condensation. Aluminum foil has a vapor permeability factor of 0.30 perm and asphalted paper has a vapor permeability factor of less than 1.00 perm. Both are within the limits of permeability recommended by many recognized authorities for normal building occupancy.

Uniform Effectiveness—Manufactured to closely controlled tolerance for density and dimension, for uniform insulation.

Stability—Highly resilient, resists settling. The mineral fibers are resistant to decay, corrosion, moisture and all other forms of deterioration.

PRODUCT DATA

DESCRIPTION	Type	Meets Federal Spec's.	Approx. Wt. lbs./sq. ft.	Approx. Thickness	Conductance		Resistance		Framing Spacing	Length
					k	C	1/k	1/C		
Perimeter Insulation	Semi-rigid (Mineral Wool)	HH-I-562 Type 1 Class 2 (Amended)	0.50 0.67 1.01 1.33	¾″ 1″ 1½″ 2″	0.24	0.32 0.24 0.16 0.12	4.17	3.13 4.17 6.25 8.33	(Widths) 12″, 18″ or 24″	48″ or 60″ (5)
	Asphalted Vapor Barrier Paper Enclosed Blanket (1)	HH-I-521 C Type 1 Class C	0.30 0.33 0.47	1½″ 2″ 3″	0.27	0.180 0.135 0.090	3.70	5.55 7.40 11.10	16″, 20″ or 24″	96″ (1½″) 24″, 48″, 96″
	Open Face Blanket	HH-I-521 C Type 1 Class B	0.59 0.80 0.90	3⅝″ 5″ 6″		0.074 0.054 0.045		13.41 18.50 22.20	o.c. 16″ or 24″ o.c.	24″, 48″, 96″ 48″, 96″
	Pouring, or blowing	HH-I-521 C Type 3	0.33 0.67 0.99	2″ 4″ 6″	0.30	0.150 0.075 0.050	3.33	6.66 13.32 19.98	Hand poured or pneumatically applied	
THERMAFIBER Insulating Wool (Mineral Wool)					RESISTANCE VALUES					
					Ref. Sur.	Heat Flow	R(4)	1/R(U)		
	Blanket Insulation Faced with Aluminum Foil	HH-I-521 C Type 1 Class C	3″—0.47 2″—0.33	Horiz. 3″ (2) Horiz. 3″ (2) Horiz. 2″ (2) Horiz. 2″ (2)	2 2 2 2	down up down up	20.1 14.8 16.4 11.1	.050 .068 .061 .090	16″ or 24″ o.c.	48″, 96″
				Horiz. 3″ (3) Horiz. 3″ (3) Horiz. 2″ (3) Horiz. 2″ (3)	1 1 1 1	down up down up	16.6 13.3 12.9 9.6	.060 .075 .078 .104		
				Vert. 2″ Vert. 2″	2 1		14.4 11.8	.069 .085		

(1) Available in Reverse Flange 15″ x 96″, also Regular Long Length Blankets 15″ x 24-ft.
(2) ¾″ minimum air space facing each reflective surface.
(3) Reflective surface on permeable side (exposed to attic).
(4) Sum of insulation, air space and surface resistance.
(5) Check with USG Representative for shipping area.

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*T.M. Reg. U.S. Pat. Off.

"THERMAFIBER," "PYROFILL," "SHEETROCK," "ROCKLATH," "DUPLEX", "USG," are trademarks registered by United States Gypsum and are used by it to distinguish products of its manufacture. "THERMAFIBER" identifies the particular mineral fiber wool; "PYROFILL," identifies the particular gypsum concrete; "SHEETROCK" identifies the particular wallboard or roof deck formboard; "ROCKLATH" identifies the particular gypsum lath or plaster base, "DUPLEX" identifies the particular insulation board, "USG" identifies the various products, all of which are manufactured only by United States Gypsum Company.

Resistant to Vermin—The mineral fibers offer no sustenance to vermin or rodent life.

Light Weight—see Product Data table.

Resilient—Spun mineral fibers are strong and resilient. Blankets spring back to full thickness when removed from package.

Moisture Resistant—Mineral wool fibers do not absorb moisture. If the insulation becomes wet, it will dry quickly as soon as the source of moisture is removed. Wool's original insulating efficiency will be restored when fibers are dry.

FEDERAL SPECIFICATIONS

THERMAFIBER* Insulating Wool complies with Federal Specification HH-I-521C.

VENTILATION

Pitched Roofs—Ventilation is extremely important, and should be provided by installing louvers or ventilators above the insulation, at each end of the attic, to relieve high summer temperatures and to improve moisture control.

Flat Roof—Methods of ventilating flat roofs vary because of different types of construction. Ventilation may be provided by louvers located in opposite sidewalls, or by galvanized metal ventilators extending down underneath the cant strips, or through a screened opening running the entire length of the overhang.

Vapor Barriers and Humidity Control—To control condensation efficiently a vapor barrier must be installed on the warm, or interior, side of a wall. The vapor barrier built into THERMAFIBER Insulating Wool Blankets is highly resistant to the passage of moisture, and automatically provides good condensation control when batts are properly installed. Although vapor barriers offer protection against the formation of condensation, and reduce the danger of damage casued by condensation, over-humidification should be guarded against. If the relative humidity in the building is excessive, steps must be taken to reduce the sources of moisture.

LIMITATIONS OF USE

1. Masonry Walls—It is strongly recommended that at least a 1″ air space be provided between insulation and exterior masonry. Suitable weep holes are recommended. If THERMAFIBER Wool is placed in direct contact with exterior masonry walls, the masonry must be watertight to prevent the insulation from becoming wet. The insulation is less effective and may transmit moisture to interior finishes if it becomes wet by direct contact with leaking exterior masonry.

2. Suspended Ceilings and Floors Over Unexcavated Areas—Suspended ceiling may be insulated by blankets installed with the vapor barrier down. Regular blankets installed in floors over unexcavated areas should be provided with additional effective installation. (Additional supports are generally not required for Reverse Flange Insulating Batts.) If preferred, Blowing Wool may be used for suspended ceilings and installed pneumatically.

SPECIFICATIONS

SCOPE

Unless otherwise shown on plans, all insulation shall be furnished and installed according to these specifications.

MATERIAL

Insulation shall be (designate product) installed in accordance with the Manufacturer's recommendations.

6″, 5″ and 3⅝″—THERMAFIBER Insulating Wool Blankets—Open Face

3″, 2″ and 1½″—THERMAFIBER Regular Insulating Wool Blankets

3″ and 2″—THERMAFIBER Reflective Insulating Wool Blankets—Foil Two Sides

3″ and 2″—THERMAFIBER Reflective Insulating Wool Blankets—Foil vapor barrier or foil breather

3″, 2″ and 1½″—THERMAFIBER Reverse Flange Insulating Wool Blankets

THERMAFIBER Pouring Wool

THERMAFIBER Blowing Wool

All to be as manufactured by the United States Gypsum Company.

APPLICATION

Insulating Wool Blankets shall be installed within the stud spaces of all exterior walls and between the framing members of the top floor ceiling or roof by (1) attaching the flanges of the wool blanket to the face of the framing members†, (2) recess the blanket and tack the flanges to the sides of studs or joists. (1) The asphalted vapor barrier shall face the inside of the building and the nailing flanges shall be tacked or stapled securely. Sufficient tacks or staples shall be used to avoid gaps or bulges in the vapor barrier paper. In no case, shall they exceed a spacing of 6″ on centers. Apply Insulation in all framing spaces as specified and, where necessary, the insulation and vapor barrier shall be cut to fit in a neat and workmanlike manner.

†*Not applicable to USG Reverse Flange Insulating Wool Blankets.*

(1) *Mandatory where foil products are used.*

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*T. M. Reg. U. S. Pat. Off.

INSTALLED RESISTANCE

The new measure of Insulation Value.

THERMAFIBER* Insulation products now offer more advantages than ever before with the advent of the "Installed Resistance" program.

In the past, thickness of insulation was the standard measure of insulation performance despite the fact that different densities, conductance ("k" Factors) greatly influenced performance.

However, rather than thickness alone, the fundamental purpose of insulation is to provide resistance to the passage of heat escaping from a house in winter or heat entering in the summer. The Installed Resistance "R" of any given product takes into account all of the influencing factors, thickness, density and conductivity. Furthermore, it is possible to specify the performance value of the mass insulation and the value of adjacent air spaces and the direction of heat flow, as well, and still use a single "R" or Resistance.

THERMAFIBER Blanket bags are marked as follows:

Thermafiber Product	Installed Resistance "R" Factor
6″ thick batts	R-24 Installed in ceilings
5″ thick batts	R-19 Installed in ceilings
3⅝″ thick batts	R-13.4 Installed in walls
3″ thick blankets	R-11 Installed in walls R-13 Installed in ceilings or floors over vented crawl spaces
2″ thick blankets	R-8 Installed in walls R-9 Installed in ceilings or floors over vented crawl spaces
1½″ thick blankets	R-7 Installed in walls and floors over vented crawl spaces

All Mineral Wool Insulation products (slag or glass type) marked with the same Installed Resistance Number have the same insulation value regardless of individual thickness.

A uniform, simple and accurate system of labeling insulation efficiently made it possible for the industry to adopt and recommend three new Insulation Standards to upgrade insulation sales and at the same time assure builders and home owners of maximum savings and comfort.

These new insulation standards are:

I. All-Weather Comfort Standard
This is the standard requirement for electric heat and air conditioning. This assures the builder of the lowest possible equipment costs and the home owner the lowest possible heating and cooling bills.

II. Moderate Comfort and Economy Standard
This standard defines the amount of insulation recommended in houses that are not electrically heated but where reasonable comfort and economy is desired.

III. Minimum Acceptable Comfort Standard
This standard specifies the amount of insulation necessary for minimum acceptable comfort in houses under any circumstance.

Listed below are charts illustrating the three Comfort Standards showing desired "U" factor, "R" factor and thickness of wool required to insulate properly:

Recommended values of thermal resistance of Air Spaces and Surfaces, both reflective and non-reflective, are shown as follows:

I. All-Weather Comfort Standard—Quality Home Requirements—For Electrically Heated and Air Conditioned Houses.

RECOMMENDED BY ALL-WEATHER COMFORT STANDARD

Building Section	U-Value Specified	"R" Number Needed to meet Required U	Wool Thickness	Installation Recommendations
Ceilings—Extreme Temp. areas	0.04	R-24	6″	Install with ¾″ or larger air space between vapor barrier & ceiling surface
Ceilings—moderate temp. areas	0.05	R-19 R-19-2S summer air-conditioning only	5″ 3″ foil two sides	Install with 1″ or larger air space between vapor varrier and ceiling surface
Walls	0.07	R-11 R-13.4	3″ 3⅝″	May be installed with or without ⅝″ air space
Floors (over unheated space)	0.07	R-13	3″	Install with 1″ or larger air space between vapor barrier & floor

II. Moderate Comfort and Economy Standard

Building Section	U-Value Specified	"R" Number Needed to meet Required U	Wool Thickness	Installation Recommendations
Ceiling	0.07	R-13	3″	Install with ¾″ or larger air space between vapor barrier & ceiling surface
		R-13-1S Summer air-conditioning only	2″ foil vapor barrier side	Install with 1″ or larger air space between vapor barrier and ceiling surface
Walls	0.09	R-8	2″	Install with one ¾″ or larger air space
Floors (over unheated space)	0.09	R-9	2″	Install with 1″ or larger air space between vapor barrier and floor

III. Minimum Acceptable Comfort Standard

Building Section	U-Value Specified	"R" Number Needed to meet Required U	Wool Thickness	Installation Recommendations
Ceiling	0.10	R-9	2″	Install with ¾″ or larger air space between vapor barrier and ceiling surface
Walls	0.11	R-7	1½″	Install with two ¾″ or larger air spaces
Floors (over unheated space)	0.11	R-7	1½″	Install with 1″ or larger air space between vapor barrier and floor

THERMAFIBER Insulation packages are marked with the R (Installed Resistance) number corresponding to the material needed to meet this requirement.

CONDUCTIVITIES (k) AND CONDUCTANCES (C)

for use in calculating heat transmission coefficients

	PRODUCT	DESCRIPTION	CONDUCTIVITY or CONDUCTANCE (1)		RESISTANCE (Thickness)	
					Per Inch	As Listed
			k	C	$\frac{1}{k}$	$\frac{1}{C}$
USG* PRODUCTS	THERMAFIBER* Insulating Wools	Enclosed, Open-faced blanket Pouring, or blowing Wool	See data page 2.		See data page 2.	
	½" USG* Insulating Products	Tile, Plank, Building & DUPLEX* Board	0.36	0.72	2.78	1.39
	25/32" USG Insulating Products	Asphalt-Coated or Impregnated Sheathing	0.38	0.49	2.64	2.04
	USG Insulating Roof Deck	Regular 1½"		0.24		4.17
		Regular or Sealed 2"		0.19		5.55
		Regular or Sealed 3"		0.12		8.33
	USG Roof Insulation	Plain-Asphalt Coated or Asphalt Impregnated ½"		0.72		1.39
		1"		0.36		2.78
		1½"		0.24		4.17
		2"		0.19		5.26
	PYROFILL* Gypsum Roof Decks (Supporting steel not included)	2 " PYROFILL & ½" SHEETROCK Formboard		0.65		1.55
		2 " PYROFILL & 1" USG Insul. Formboard		0.24		4.06
		2 " PYROFILL & 1" USG Acoustical Formb'd		0.26		3.81
		2¼" PYROFILL & ¼" Asbestos Board Formb'd		0.71		1.41
	USG Metal Edge Gypsum Plank	2" Thick, precast decking		0.60 (2)		1.66
	USG Steel Roof Deck	Rib type—interlock panel	4.00 +	0.90 (3)	Negl.	1.11 (3)
INTERIOR FINISHES	Gypsum Plaster, Sand	Plaster thickness—½" ½"		11.10		0.09
	Gypsum Plaster, LW-Aggregate	Plaster thickness—½"		3.12		0.32
	Gypsum Lath & Plaster, Sand	Plaster thickness—½" ⅜"		2.40		0.41
	Metal Lath & Plaster, Sand	Plaster thickness—¾" ¾"		7.69		0.13
	Wood Lath & Plaster, Sand	Plaster thickness		2.50		0.40
	Insulating Board Base—½" Thick	Plaster thickness—½"		0.66		1.67
	SHEETROCK* Gypsum Wallboard	Plain or Decorated (dry wall) ½"		2,22		0,45
	Gypsum Board	ROCKLATH* Plaster Base ⅜"		3.10		0.32
EXTERIOR FINISHES (frame walls)	Brick Veneer	4" Thick (Nominal)		2.27		0.44
	Wood Shingle Siding	7½" Exposure		1.15		0.87
	Yellow Pine Lap Siding	½" x 8"		1.18		0.85
SHEATHING	Gypsum—½"	Asphalt or Asphalt Impreg.		2.86		0.35
	Insulating Board—25/32"	Plain		0.48		2.06
	Fir & Yellow Pine (1")	Actual Thickness—25/32"		1.02		0.98
WOODS	Yellow Pine or Fir		0.80		1.25	
	Fir Sheathing—Building Paper & Yellow Pine Lap Siding			0.53		1.89
ROOFING MATERIALS	Asphalt Shingles			2.27		0.44
	Built-up Roofing	Assumed Thickness—⅜"		3.00		0.33
	Wood Shingles			1.06		0.94
MASONRY MATERIALS	Brick	Face		2.27		0.44
	Clay Tile (Hollow) 4"	1—Air Cell Direction Heat Flow		0.90		1.11
	Clay Tile (Hollow) 6"	2—Air Cell Direction Heat Flow		0.66		1.52
	Clay Tile (Hollow) 8"	2—Air Cell Direction Heat Flow		0.54		1.85
	Concrete (Poured)	Light Weight Aggregate (4)	2.50		0.40	
	Concrete (Poured)	Sand & Gravel Aggregate (5)	12.00		0.80	
	Concrete (Block) 4"	Hollow—Cinder Aggregate		0.90		1.11
	Concrete (Block) 8"	Hollow—Gravel Aggregate		0.90		1.11
	Concrete (Block) 8"	Hollow—Cinder Aggregate		0.58		1.72
	Concrete (Block) 12"	Hollow—Cinder Aggregate		0.52		1.89
SURFACES	Still Air (Horizontal-up)	Ordinary Non-Reflective Materials		1.63		0.61
	(Vertical-Horizontal)	Ordinary Non-Reflective Materials		1.46		0.68
	15 MPH Wind Velocity	Any Position, Any Direction		6.00		0.17
AIR SPACE (Vertical)	Bounded by ordinary materials	¾" to 4" Horiz.-Up (E = 0.82)		1.08		0.92
	Aluminum Foil, bright one side	¾" to 4" Horiz.-Up (E = 0.05)		0.38		2,64
AIR SPACE (Horizontal)	Bounded by Ordinary Materials	¾" to 4" Vertical-Up (E = 0.82)		1.24		0.80
	Aluminum Foil, bright one side	¾" to 4" Vertical-Up (E = 0.05)		0.54		1.84

(1) Expressed in Btu per sq. ft. per hr. per deg. F. temperature difference. Conductivities (k) are per inch thickness and conductances (C) are for thickness or construction stated, not per inch of thickness.

(2) Figure based on U.S.Gypsum Laboratory Tests.

(3) "U" Factor shown, includes "Outside Surface—15 mph wind—0-17," "Built-up Roofing—⅜"—0.33", "Inside Surface—Still air—0.61".

(4) Density 80 lbs. per cubic foot.

(5) Density 140 lbs. per cubic foot, not dried.

(6) Based on 50 degree temperature difference.

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*T.M. Reg. U.S. Pat. Off.

THERMAFIBER*

INSULATING SOUND CONTROL SYSTEM

DESCRIPTION

A new low cost sound control system, consisting of THERMAFIBER Mineral Wool batts and slotted wood studs, has been developed by U.S. Gypsum for use as divider partitions. Either lath and plaster or dry wall may be used.

Studs and wall facing materials are framed and finished in the normal manner. The wood studs are slotted with a ⅛″ saw cut through the center of the wide face to within 3″ of each end. 3″ THERMAFIBER batts are installed in the stud space flush to one face, leaving a ⅝″ recess on the other side. Care must be taken to insure that nails or screws used in attaching the facing material do not penetrate into the stud slot.

FUNCTION AND UTILITY

Adaptability: May be used in any location where not subjected to a combined line and dead load in excess of 60 pounds per square foot, or as specified by local building code.

Sound Transmission: An 87½% improvement in restraining air-borne sound is obtainable by using gypsum lath and plaster with THERMAFIBER Mineral Wool Batts on slotted wood studs. The conventional wood stud partition system has an efficiency of 36 decibels as opposed to the THERMAFIBER Mineral Wool insulating sound control system, which has a 45 decibel transmission loss average.

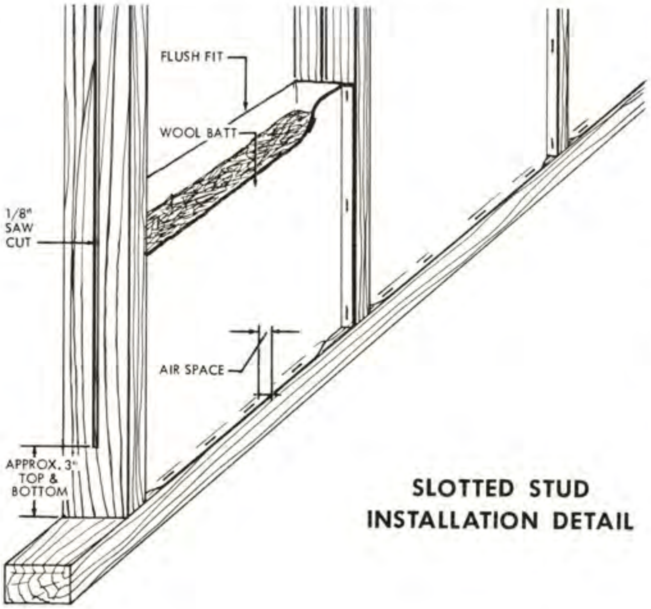
Strength: In test conducted by U.S. Gypsum, load bearing qualities were not appreciably reduced by slotting. Test data is available upon request.

Construction: All slotted studs may be nailed to the top and bottom plate in the normal manner. Wall facing materials may be attached to the stud with any suitable fastener. Care must be taken to prevent bridging the slotted stud sections together.

WOOD FRAMING REQUIREMENTS

Wood framing meeting the following minimum requirements is necessary for proper performance of all gypsum board fasteners.

1. Framework shall meet the minimum requirements of FHA and local building codes.
2. Framing members shall be straight, true, of uniform dimension, and framing shall be properly aligned.
3. All framing lumber shall be of a good grade for the intended use, and 2″x4″ nominal size or larger shall bear the grade mark of a recognized inspection agency using grading rules for lumber recommended to American Lumber Standards Committee.
4. All framing lumber shall have a moisture content not in excess of 15% at time of gypsum wallboard applications.
5. Do not attach gypsum board to extremely soft framing members.



SLOTTED STUD INSTALLATION DETAIL

Failure to observe these minimum framing requirements, which are applicable to both screw and nail attachment, will materially increase the possibility of ineffective fastening concealment, due to warping or dimensional changes. This is particularly true if framing lumber has greater than normal tendencies to warp or shrink after erection.

HEATING AND VENTILATION RECOMMENDATIONS

Framing should approach as closely as possible the moisture content it will reach in service by allowing the house, after it is enclosed, to stand as long as possible prior to the application of the gypsum board. Provide heat in winter or during damp conditions at a uniform temperature in the range of 50° to 70°F. Provide ventilation to remove excess moisture.

LIMITATIONS OF USE

Good framing is essential for proper performance of the THERMAFIBER Insulation Sound Control System. (See "Wood Framing Requirements")

To achieve good efficiency, avoid direct openings through the walls, back to back utility boxes, medicine cabinets, loose fitting or low rated sound transmission doors, or interconnecting air ducts, etc.

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*T.M. Reg. U.S. Pat. Off.

SPECIFICATIONS

SCOPE

Unless otherwise shown on plans, all materials shall be furnished and installed according to these specifications.

Wall surface material may be applied following normal procedures as recommended by the material manufacturer.

MATERIAL

Insulation shall be 3″ THERMAFIBER* Blankets (15″ or 23″) x 96″. Studs shall be 2 x 4 lumber meeting requirements as specified under "Wood Framing Requirements."

APPLICATION

THERMAFIBER Insulating Wool blankets shall be installed by fastening the blanket flanges to the side of each stud, top and bottom plates, by (stapling) (nailing) 6″ C. to C. maximum, closing all voids. Install blankets with a tight flush fit against one wall surface allowing an air space between the insulation and the opposite wall surface.

Slotted wooden studs shall be prepared before erection by centering the ⅛″ saw cut in the wide face of the stud and extending through the narrow width. Cut is to extend to within 3″ of top and bottom of stud.

SOUND TRANSMISSION LOSS DATA

SLOTTED STUD—SHEETROCK* Gypsum Wallboard

PARTITION CONSTRUCTION	Test Number	Frequency									Ave.	Partition Thick-ness	Weight lbs. Per Sq. Ft.	Class. (1)
		125	175	250	350	500	700	1000	2000	4000				
8′-10″ x 14′-0½″ Panel consisting of—2″ x 4″ St'd. Wood Studs 16″ C. to C. ⅝″ SHEETROCK* FIRECODE* Wallboard (Single layer each side, Screw Attached)	30 FT	17	16	34	30	35	40	42	38	44	32.9	4⅞″	6.43	34
Panel—Same as Test No. 30 FT, except 2″ x 4″ wood studs were slotted with a ⅛″ centered saw cut thru the 4″ side, continuous to within 3″ from each end.	27 FT	25	30	34	40	40	46	48	42	47	39.1	4⅞″	6.09	43
Panel—Same as Test No. 27 FT, except the addition of 3″ thick THERMAFIBER Insulating Wool batt. (Flush-one side, recessed on the other).	29 FT	31	33	42	45	49	51	51	46	50	44.2	4⅞″	6.48	48

SLOTTED STUD—ROCKLATH* Plaster Base & USG* Gypsum Plaster

5′-6½″ x 6′-9″ Panel consisting of 2″ x 4″ St'd. Wood Studs 16″ C. to C., ⅜″ ROCKLATH Plaster Base (nailed), 7/16″ plaster-sanded 1:2½, scratch double back, 1/16″ lime putty—trowel finish.	TL 61 -231	30	27	25	42	31	40	38	39	55	36	5⅜″	14.38	33
Panel—Same as Test No. TL 61-231, except 2″ x 4″ Wood studs were slotted with a ⅛″ centered saw cut thru the 4″ side, and the addition of 3″ Thick THERMAFIBER Blankets, flush one side.	TL 61 -235	39	39	45	47	45	45	47	42	54	45	5⅜″	14.75	40

RESILIENT ATTACHMENT—RC-1 Channel & SHEETROCK Gypsum Wallboard

8′-10″ x 14′-0½″ Panel consisting of 2″ x 4″ Std., Wood Studs 16″ C. to C. USG* RC-1 Metal Resilient Channel fastened to one side, with drywall screws, 24″ C. to C., horizontally. Screw applied-single layer ⅝″ SHEETROCK* Gypsum Wallboard each side.	31 FT	24	29	33	39	39	50	51	46	48	39.8	5⅜″	6.52	43
Panel—Same as Test No. 31 FT, except addition of 3″ Thick THERMAFIBER Blankets.	33 FT	32	36	42	46	52	54	58	53	54	47.3	5⅜″	6.98	52

(1) Classification index is in accordance with ASTM Procedure E90-61T

*T.M. Reg. U.S. Pat. Off.

USG*
PERIMETER INSULATION

DESCRIPTION

USG Perimeter Insulation consists of inorganic spun mineral wool fibers mechanically formed and compressed into a uniform semi-rigid board of definite dimensions and controlled density. Applied along the perimeter of slabs or to the inside of foundations walls, USG Perimeter Insulation effectively prevents heat loss through concrete floors and walls of crawl spaces used as heating plenums. Results: warm floors and significant savings in fuel costs.

FUNCTION AND UTILITY

High Thermal Resistance—conductance "k" Factor is 0.24 per inch thickness (Btu/in/hr sq. ft. °F. at 75°F. Mean Temp) and Resistance 4.17 per inch thickness. See Product Data table page 2 for Factors for given thickness.

Noncombustible—The mineral fibers will not burn or support combustion.

Permanent—Because it is inorganic, mineral wool it will not deteriorate, is resistant to vermin and will not provide sustenance for fungi or termites.

Non-Capillary—Inorganic fibers will not wick moisture from damp or wet areas.

Resists Compression—Dense semi-rigid board (8-lbs/cu.-ft.) resists compression under the pressure of concrete slab.

Economical—Low in cost; no maintenance required.

Full Range of Thicknesses—USG Perimeter Insulation is available in ¾″, 1″, 1½″ and 2″ thicknesses to meet all insulation requirements.

FHA SPECIFICATIONS

USG Perimeter Insulations comply with MPS FHA No. 300 dated 11-1-58.

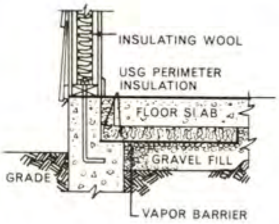
FEDERAL SPECIFICATIONS

USG Perimeter Insulations comply with HH-I-562, Type I, Class 2 (as amended).

LIMITATIONS OF USE

Perimeter Insulation should not be used below the normal water table.

APPLICATION



SPECIFICATIONS

1. Perimeter edge of concrete floor slab shall be insulated with Perimeter Insulation as manufactured by the U.S. Gypsum Company. Insulation shall be (¾″) (1″) (1½″) (2″) thick.
2. Vertical application—Inside of foundation. With all exterior masonry and poured concrete walls, Perimeter Insulation ——— shall be installed against the inside face of the foundation prior to back filling and before any base-layer of gravel, stone or cement slab itself is put in place. Permanent attachment is not required. Insulation may be held firmly in place by temporary bracing or the pressure of back fill. Butt edges of board together. Care should be taken so as not to damage insulation when back fill is put in place.
3. Vertical Application—Exterior of foundation. For exterior application trench shall be dug around exterior 12 inches or more below grade. Exposed surface of foundation shall be cleaned of dirt and painted with asphalt foundation primer. USG Perimeter Insulation ——— inches thick shall be cemented to the surface of the foundation with mastic asphalt cement butting edges of board together. Metal flashing shall be installed above insulation to shield from elements. Asbestos cement board or Portland cement stucco shall be applied over the outside exposed surface of the insulation.
4. Horizontal Application. Where horizontal insulation is specified USG Perimeter Insulation ——— inches thick shall be installed after gravel fill has been built up to grade and thoroughly tamped. Insulation shall be laid in place with edges pressed together and butting foundation wall or vertical insulating applied adjacent to it.
5. When called for on the drawings, a vapor barrier of 55# asphalt roll roofing shall be laid over the underbed.
6. All work shall be done by experienced contractor and completed in a neat and workmanlike manner.

*T.M. Reg. U.S. Pat. Off.

UNITED STATES GYPSUM—The Greatest Name in Building
GENERAL OFFICES • 300 WEST ADAMS STREET • CHICAGO 6, ILLINOIS
U. S. G. SALES OFFICES LOCATED AT THESE CITIES

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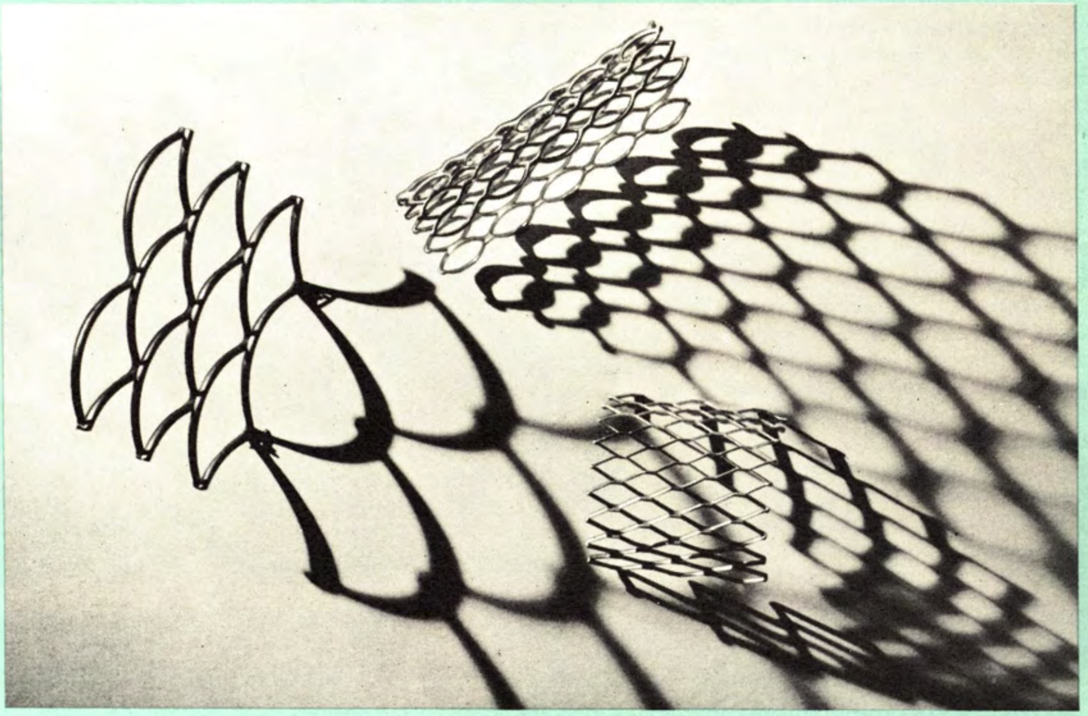
ATLANTA, GA.
BALTIMORE, MD.
BIRMINGHAM, ALA.
BUFFALO, N.Y.
CHARLOTTE, N.C.
CHICAGO, ILL.
CINCINNATI, OHIO
CLEVELAND HEIGHTS, OHIO
(CLEVELAND)
CLIFTON, N.J.
(NEWARK)
DALLAS, TEXAS
DENVER, COLO.
DE WITT, N.Y.
(SYRACUSE)
GRAND RAPIDS, MICH.
HAMDEN, CONN.
(NEW HAVEN)
HARRISBURG, PA.
HEMPSTEAD, L.I., N.Y.
HOHOKUS, N.J.
HOUSTON, TEXAS
INDIANAPOLIS, IND.
JACKSONVILLE, FLA.
KANSAS CITY, MO.
LOS ANGELES, CALIF.
LOUISVILLE, KY.
MIAMI, FLORIDA
MILWAUKEE, WISC.
MINNEAPOLIS, MINN.
NEW ORLEANS, LA.
NEW YORK, N.Y.
OKLAHOMA CITY, OKLA.
OMAHA, NEBR.
PASADENA, CALIF.
PEORIA, ILL.
PHILADELPHIA, PA.
PHOENIX, ARIZ.
PITTSBURGH, PA.
PORTLAND, ORE.
RALEIGH, N.C.
RICHMOND, VA.
SACRAMENTO, CALIF.
ST. LOUIS, MO.
SALT LAKE CITY, UTAH
SAN ANTONIO, TEXAS
SAN DIEGO, CALIF.
SAN FRANCISCO, CALIF.
SAN LEANDRO, CALIF.
(OAKLAND)
SCARSDALE, N.Y.
(NEW YORK CITY)
SEATTLE, WASH.
SOUTHFIELD, MICH.
(DETROIT)
WALTHAM, MASS.
(BOSTON)
WARWICK, R.I.
(PROVIDENCE)

A.I.A. File 15-T 30-J

TECHNICAL INFORMATION

USG® EXPANDED METALS



UNITED STATES GYPSUM

1964

UNITED STATES GYPSUM

A.I.A. File 15-T 30-J

EXPANDED METALS BY UNITED STATES GYPSUM

THE SHAPE OF THINGS TO COME

At a time when our economy has demonstrated its greatest need for product innovations to stimulate consumer buying, United States Gypsum presents advanced designs in expanded metals for new ideas in architectural and product design.

Six dramatic new patterns—ARMORWEAVE, FESTOON, CATHEDRAL, WAVELENGTH, RONDO and MIN-X—join the accepted and widely used EXPAND-X expanded metal pattern to offer an exciting new series of expanded metals that open new frontiers for everyone concerned with design, manufacture and sale of products for better living.

Here, from the drawing boards at U.S.G., come expanded metals with new warmth of appearance, with greater resistance to bending and less weight than the solid metal sheets from which they are made. Sheets of metal are slit and cold-drawn into continuous patterns. The strands and bonds of resulting meshes come to rest at a sharp angle to the original plane of the sheet, adding rigidity. Expanded metals in this form have thousands of uses. U.S.G. also produces these meshes flattened by pressure rolls, for applications where a smooth surface is desired. These versatile meshes are available in carbon steel, aluminum, and in some meshes, stainless steel.

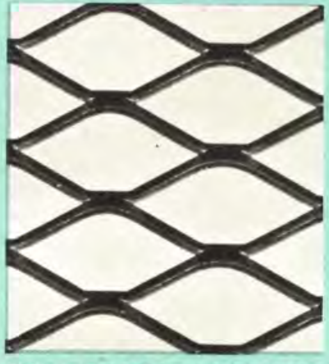
You who create, make and sell America's buildings and products can expand your horizons by adapting these decorative expanded metals to your purposes; can fashion, with new freedom, *the shape of things to come.*

AID TO ARCHITECTS AND DESIGNERS

To promote a better understanding of expanded metals and their use, and assure a satisfactory result for you; we offer design and sales service to aid architects and designers. A staff of engineers is equipped to assist in working out specific problems concerning design, fabrication, finishing and attachment of expanded metals. This service involves no obligation.

See Page 16 for a listing of offices where U.S.G. Sales Engineers and Architects Service Representatives are located.

EXPAND-X EXPANDED METAL

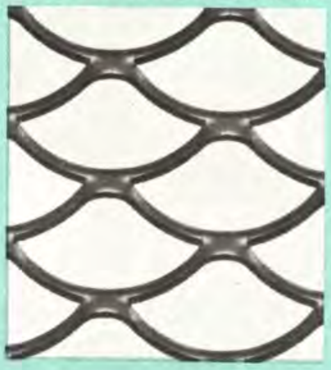


EXPAND-X is a diamond-shaped pattern of expanded metal with many applications in industrial plants and products. Its advantages over solid sheets—greater strength with less weight, visibility, free passage of light and air—make it ideally suited where protection, reinforcement, air flow and lighting are important.

When EXPAND-X is flattened in manufacture, the smooth level surface produced makes this expanded metal adaptable to hundreds of other uses.

EXPAND-X and Flattened EXPAND-X are available in a variety of weights and mesh sizes to meet varying conditions. See Pages 4 to 7 for information on these products.

DECORATIVE EXPANDED METAL



The six patterns of U.S.G. Decorative Expanded Metals are stimulating new ideas for product designers and architects everywhere. Here are materials that enhance a product's appearance and sales appeal while providing the advantages of light weight, strength and ease of fabrication.

Available in a variety of meshes—for appropriate visibility through the mesh; for air flow; for pleasing appearance; for modern functional styling. With these meshes you can achieve design treatments that add substantially to the product or building.

USG Decorative Expanded Metal is practical as well as beautiful. Special manufacturing techniques make them lighter, yet more rigid than solid sheet materials. They will not ravel when cut and may be easily welded and formed. Here, then, are materials which combine the beauty and utility so vital to the design of any product or building.

See Pages 8 to 11 for information on these products.

GRATE-X metal grating, a heavy type expanded metal.

AVAILABLE METALS

EXPAND-X and Flattened EXPAND-X manufactured from carbon steel, stainless steel and aluminum are available from stock. U.S.G. Decorative Expanded Metals are produced from carbon steel and aluminum. Other metals and alloys may be expanded to meet special requirements. Consult your nearest U.S.G. Sales Office for details and additional information. (See Page 16 for a list of offices).

FABRICATION

USG* Expanded Metals may readily be fabricated and formed in the same accustomed ways as sheet metals. They do not ravel when cut. They may be welded without difficulty, and absence of scale on the mesh facilitates perfect welds.

FINISHING

Architects and designers find many delightful color combinations in using painted, anodized or porcelain enameled USG Expanded Metals in correlation with colored fabrics or other materials. Painting and other types of finishing offer no problems with USG Expanded Metals. The surfaces are readily accessible to paint. All the accepted industrial methods of application may be used. USG aluminum Expanded Metal is easily anodized. Either steel or aluminum expanded metals can be successfully porcelain enameled in a wide range of colors. Additional information on finishing USG Expanded Metals may be found on Page 13.

NATIONWIDE DISTRIBUTION

Whatever your need for expanded metal, a U.S.G. Expanded Metal Distributor is ready to serve you. His warehouse is stocked with USG Expanded Metals to assure you of the prompt service you need *when you need it.* Contact the U.S.G. Sales Office for the name of the nearest distributor.

"USG", "GRATE-X" and "EXPAND-X" are registered trade-marks, and "RONDO", "FESTOON", "WAVELENGTH", "CATHEDRAL", "MIN-X", and "ARMORWEAVE" are trade-marks owned by the United States Gypsum Company, and all identify the particular expanded metal manufactured only by United States Gypsum Company.

REPRESENTATIVE USES

In Products

- Air Duct Outlets
- Conveyor Guards
- Annealing Baskets
- Grain Driers
- Machine Guards
- Intake Grilles
- Harvesting Baskets
- Display Racks
- Filter Screens
- Tool Stand Shelves
- Drying Trays
- Displays
- Range Hood Vent
- Lawn Mower Guard
- Air Conditioner Grille
- Lamps
- Automobile Grille
- Beverage Racks
- Cabinet Doors
- Furnace Grilles
- Porch Furniture
- Breakfront Grilles
- Freezer Vent
- TV and Radio Grilles
- Book Shelves
- Screen Door Guards
- Sign Backgrounds

Architectural

- Areaway Guards
- Shelving
- Storage Lockers
- Stairway Enclosures
- Laundry Partitions
- Factory Enclosures
- Skylight Guards
- Ornamental Screens
- Room Dividers
- Ceilings
- Partitions
- Accent Points
- Railing Guards
- Decorative Trim
- Patio Coverings
- Building Facades
- Ornamental Grilles
- Sun Screens
- Jalousie Covers
- Shutters
- Fencing
- Louvers
- Awnings
- Space Dividers
- Folding Door Grilles

Gratings, Walkways, Platforms, Stair Treads, Flooring, Scaffolding.

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USG Safety Walk Grating 16

ARCHITECTURAL: Decorative Facia & Sun Shade

IN PRODUCT: Decorative Grille

EXPAND-X*
EXPANDED METAL

DESCRIPTION

Below: are the USG Expanded Metals which impart their advantages to thousands of applications to make them lighter, stronger and more attractive.

EXPAND-X Expanded Metal is the diamond-shaped product in unflattened form. The strands and bonds are at a sharp angle to the original plane of the sheet. This factor adds strength to the expanded product.

FLATTENED EXPAND-X is made by passing the diamond-shaped expanded metal between pressure rolls. These flatten the material so that strands and bonds are in the same plane. This produces a material suitable for applications where a smooth flat surface is desirable.

DECORATIVE EXPANDED METAL offers design possibilities unlimited. Each expanded metal pattern is versatile enough to serve as the main design element, or to lend a valuable assist in the form of ornamental decoration.

The six decorative patterns—ARMORWEAVE, FESTOON, CATHEDRAL, WAVELENGTH, RONDO and MIN-X—retain the many important practical advantages of EXPAND-X and provide a design motif about which the architect or designer can exercise his personal creativity.

See Pages 8 to 11 for information on these products.

GRATE-X* Expanded Metal is a heavy type metal grating.

PROJECTION MESH is produced with small toothlike projections on the upper surface for maximum anti-skid qualities.

See Page 16 for detailed information on GRATE-X and PROJECTION MESH.

ADVANTAGES

Made in a wide selection of gauges and sizes. Light weight, with the other "plus" features of expanded metal compared to the original solid sheet. Since its introduction it has been a new material with a "thousand and one" new uses. It can be cut without raveling, and formed or welded.

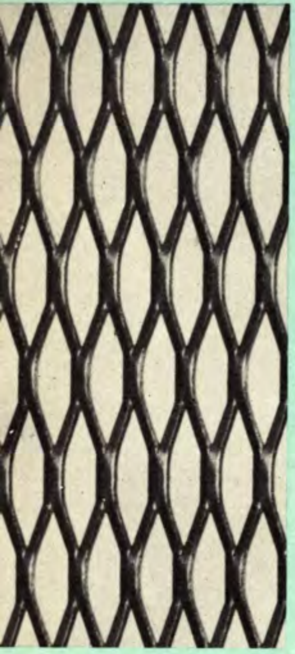
Choice of Materials. Carbon steel, stainless steel, and aluminum are available from stock. Copper, brass, bronze and other expandable metals may be had on special order.

Fabricating and Finishing

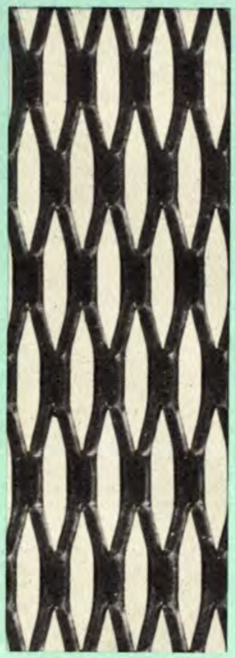
Welding—Arc, resistance or brazing methods can be used. Absence of scale on the mesh facilitates welding processes and makes a first class weld possible.

Painting—Both EXPAND-X and FLATTENED EXPAND-X Expanded Metal are shipped unpainted. The material can be painted, but should be clean and free from grease, and hung at an angle to prevent collecting of paint at bonds.

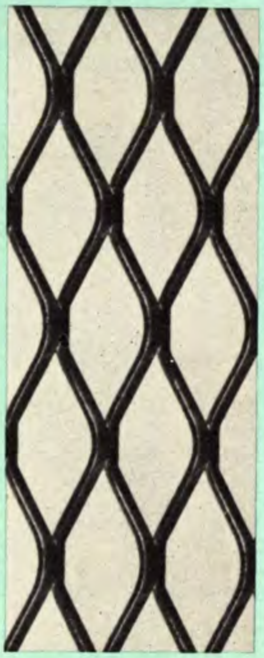
FULL SIZE



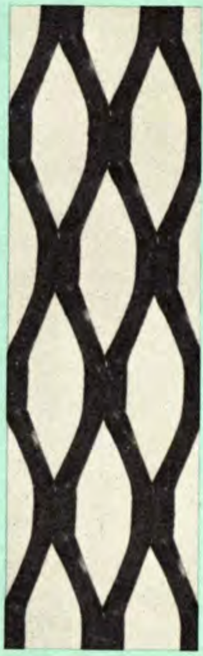
¼" No. 20
EXPAND-X



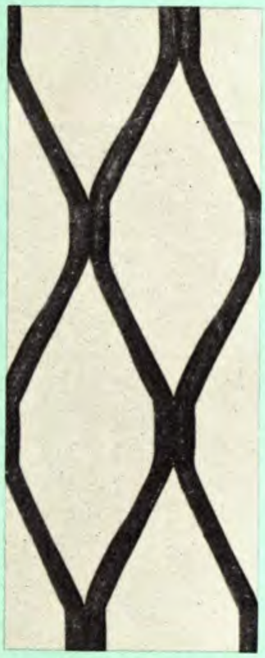
¼" No. 18
FLAT. EXPAND-X



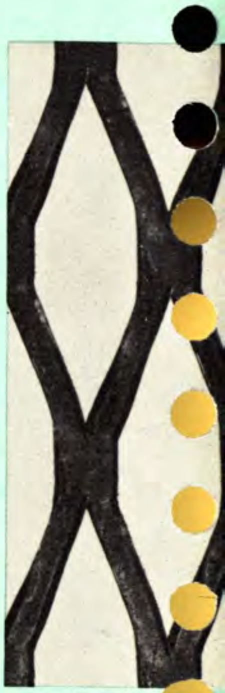
½" No. 18
EXPAND-X



½" No. 13
FLAT. EXPAND-X



¾" No. 13
FLAT. EXPAND-X



¾" No. 9
FLAT. EXPAND-X

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*T.M. Reg. U.S. Pat. Off.

FUNCTION AND UTILITY

CARBON STEEL EXPAND-X. Carbon Steel EXPAND-X and FLATTENED EXPAND-X Expanded Metal, in addition to the inherent characteristics of solid sheet steel, combine light weight with the many other unique advantages of expanded metal over its original sheet form.

There are no rivets or welded joints except where units are joined. Strands of unflattened expanded metal are at an angle, thus distributing strain in many directions to the supporting structure and improving rigidity and bending resistance.

The large percentage of open area permits maximum passage of air and light.

The material can be readily cut into desired shapes without danger of raveled strands, and may be welded, bent and formed, drawn and flared. It is economical to apply and maintain. Various weights and sizes are available to meet varying needs.

There are a vast number of applications and uses for carbon steel EXPAND-X and FLATTENED EXPAND-X.

STAINLESS STEEL EXPAND-X. Stainless EXPAND-X and FLATTENED EXPAND-X Expanded Metal offer industry a material with the happy combination of the advantages inherent in stainless steel plus the advantages peculiar to the design of expanded metal. To engineers and product designers, this means new and improved products and equipment.

The stainless material is highly resistant to most types of corrosion and oxidation. This makes it ideal for applications in chemical, oil, textile, food processing, meat packing, dairy and beverage industries; household, surgical and marine equipment and electrical appliances.

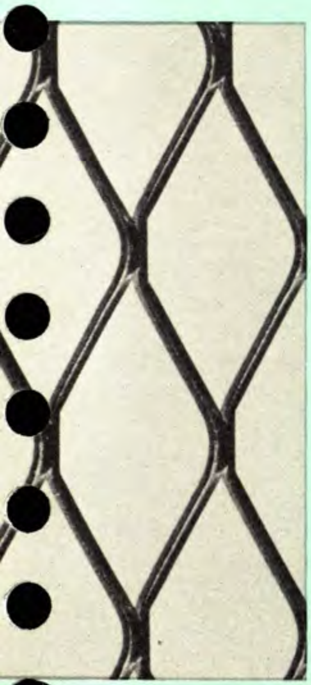
For further information on stainless EXPAND-X and FLATTENED EXPAND-X Expanded Metal and where it can be used, write for our technical pamphlet, "Stainless EXPAND-X".

ALUMINUM EXPAND-X. Aluminum EXPAND-X and FLATTENED EXPAND-X—a new material for industry, with all the advantages of aluminum, plus—lighter weight—a clean attractive design, which are added in the expanding process. Light weight—almost featherlight—with the unflattened expanded metal having many better performance properties than in its original sheet form—permits lighter weight equipment and appliances to ease work in industry and in the home.

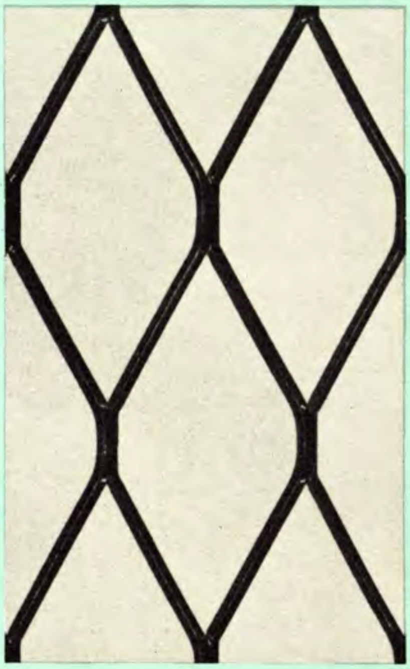
The highly pleasing appearance of Aluminum EXPAND-X and FLATTENED EXPAND-X Expanded Metal—its clean, geometric design, its lasting, corrosion-resisting, satiny finish—suggest a multitude of uses for products of unusual beauty. Food processing and chemical industries, especially, will find many uses for this versatile material. Maintenance costs of the aluminum material are negligible.

Aluminum EXPAND-X and FLATTENED EXPAND-X Expanded Metal fabricate easily, can be cut without raveling and be formed or welded.

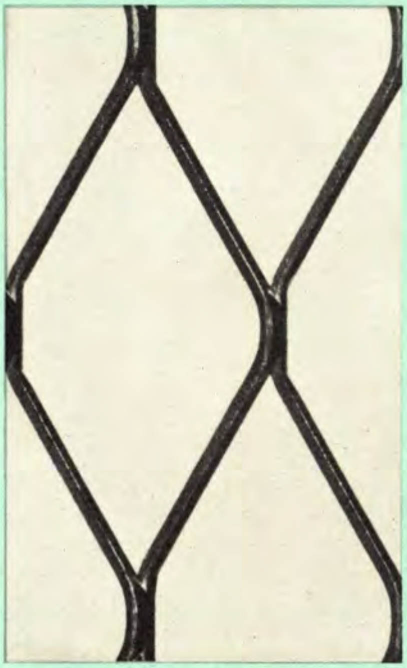
The wide variety of uses and applications of aluminum EXPAND-X and Flattened EXPAND-X includes many in the automotive, building, chemical, textile, mining, food processing and meat packing industries; electrical appliances, furniture, household, farming, photographic and sports equipment. For further information write for our technical pamphlet, "Aluminum EXPAND-X Expanded Metal."



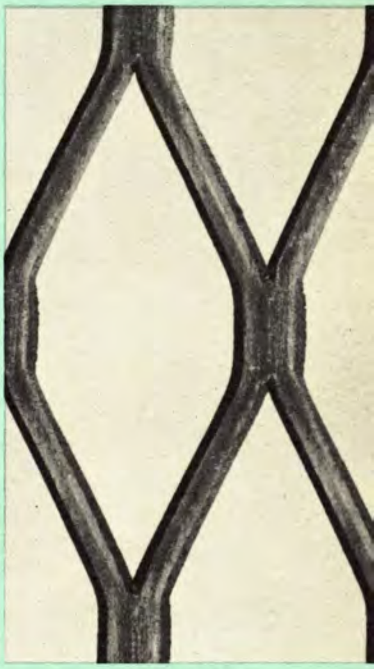
¾" No. 16
EXPAND-X



1" No. 16
EXPAND-X



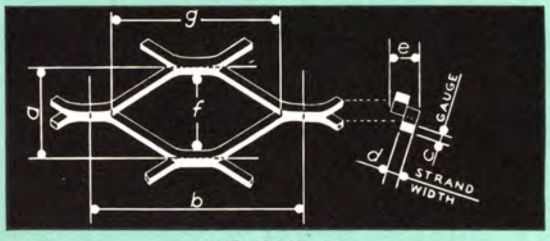
1½" No. 13
EXPAND-X



1½" No. 9
FLAT. EXPAND-X

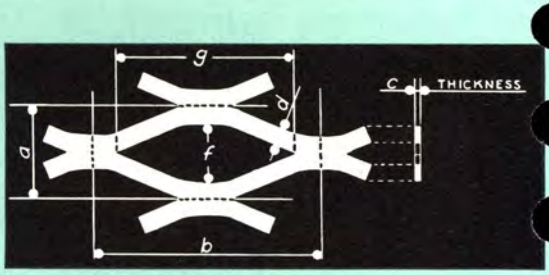
EXPAND-X
EXPANDED METAL

TECHNICAL DATA



EXPAND-X

All weights and dimensions are approximate



FLATTENED EXPAND-X

Styles Available	Wt. Lbs. C Sq. Ft.		Diamond Size a x b inches	Opening Size f x g inches	Strand c x d inches	Overall Thickness e inches	Standard Sheet Size		Per Cent Open Area	U.S. Std. Gauge Steel Used
	Black	Galv.					width	length		
Carbon Steel EXPAND-X										
¼"—No. 20	86	131	.26 x1.0	.125x .687	.036x.076	.125	4′	8′	40	20
¼"—No. 18	114	159	.26 x1.0	.125x .687	.047x.076	.125	4′	8′	40	18
½"—No. 40	40	60	.497x1.195	.406x .937	.047x.050	.110	4′	8′	83	18
½"—No. 20	43	59	.459x1.195	.375x .875	.036x.066	.134	4′	8′	71	20
½"—No. 18	70	84	.507x1.195	.375x .950	.047x.089	.161	4′ & 6′	8′ & 10′	65	18
½"—No. 16	86	104	.507x1.195	.375x .890	.059x.089	.159	4′ & 6′	8′ & 10′	65	16
½"—No. 13	147	175	.503x1.2	.350x .900	.089x.098	.199	4′ & 6′	8′	61	13
¾"—No. 34	34	51	.865x2.0	.750x1.688	.059x.060	.129	4′	8′	85	16
¾"—No. 16	54	65	.880x2.0	.700x1.640	.059x.095	.183	4′ & 6′	8′ & 10′	76	16
¾"—No. 13	80	93	.880x2.0	.734x1.640	.089x.095	.185	4′ & 6′	8′ & 10′	76	13
¾"—No. 10	120	133	.889x2.0	.675x1.563	.089x.141	.277	4′ & 6′	8′	69	13
¾"—No. 9	180	202	.857x2.0	.600x1.45	.134x.137	.290	4′ & 6′	8′ & 10′	68	10
1" —No. 16	47	55	1.01 x2.375	.875x1.937	.059x.095	.196	4′	8′	82	16
1½"—No. 16	40	47	1.35 x3.00	1.180x2.60	.059x.112	.210	4′	8′	85	16
1½"—No. 13	60	68	1.35 x3.00	1.200x2.60	.089x.112	.213	4′, 5′ & 6′	8′ & 10′	85	13
1½"—No. 10	79	87	1.33 x3.00	1.156x2.52	.089x.140	.248	4′ & 6′	8′ & 10′	81	13
1½"—No. 9	119	129	1.33 x3.00	1.140x2.43	.134x.141	.289	4′ & 6′	8′ & 10′	76	10
1½"—No. 6	250	273	1.33 x3.00	1.000x2.312	.198x.203	.410	Note 1		70	6
2" —No. 10	68	77	1.85 x4.0	1.625x3.43	.089x.164	.296	4′	8′	83	13
2" —No. 9	90	102	1.85 x4.0	1.562x3.375	.134x.149	.296	Special Order		84	10
Carbon Steel FLATTENED EXPAND-X										
¼"—No. 20	83	125	.26 x1.03	.088x .70	.031x.086	.031	4′	8′	34	20
¼"—No. 18	111	159	.26 x1.03	.088x .70	.042x.086	.042	3′ & 4′	8′	34	18
½"—No. 40	39	60	.497x1.23	.371x1.00	.038x.063	.038	4′	8′	75	18
½"—No. 20	41	42	.438x1.25	.313x .938	.032x.070	.032	3′ & 4′	8′	64	20
½"—No. 18	66	88	.507x1.26	.289x1.00	.038x.109	.038	3′ & 4′	8′ & 10′	58	18
½"—No. 16	82	112	.507x1.26	.301x1.00	.050x.103	.050	3′ & 4′	8′ & 10′	60	16
½"—No. 13	138	175	.503x1.26	.259x .97	.070x.122	.070	3′ & 4′	8′	52	13
¾"—No. 34	32	51	.865x2.10	.709x1.75	.045x.078	.045	4′	8′	83	16
¾"—No. 16	51	71	.880x2.10	.650x1.75	.048x.115	.048	3′ & 4′	8′ & 10′	74	16
¾"—No. 14	64	70	.880x2.10	.642x1.75	.063x.119	.063	3′ & 4′	8′	73	14
¾"—No. 13	76	93	.880x2.10	.642x1.75	.070x.119	.070	3′ & 4′	8′ & 10′	73	13
¾"—No. 9	171	195	.857x2.10	.529x1.63	.110x.164	.110	3′ & 4′	8′ & 10′	62	10
1" —No. 16	45	55	1.01 x2.50	.780x2.06	.048x.115	.048	3′ & 4′	8′	78	16
1½"—No. 16 (Lt.)	29	40	1.35 x3.13	1.14 x2.71	.048x.103	.048	3′ & 4′	8′	87	16
1½"—No. 16 (Hvy.)	38	44	1.35 x3.19	1.13 x2.69	.048x.123	.048	3′ & 4′	8′	85	16
1½"—No. 14	50	63	1.35 x3.15	1.07 x2.68	.063x.138	.063	3′ & 4′	8′	80	14
1½"—No. 13	57	68	1.35 x3.15	1.07 x2.68	.070x.138	.070	3′ & 4′	8′ & 10′	80	13
1½"—No. 9	113	129	1.35 x3.25	1.00 x2.62	.106x.175	.106	3′ & 4′	8′ & 10′	74	10
Stainless Steel EXPAND-X										
½"—No. 18	73	....	.475x1.20	.359x .906	.050x.082	.154	3′ & 4′	8′	65	18
½"—No. 16	91	....	.475x1.20	.359x .875	.062x.082	.161	3′ & 4′	8′	65	16
¾"—No. 18	48	....	.828x2.00	.719x1.656	.050x.101	.176	3′ & 4′	8′	77	18
¾"—No. 16	60	....	.828x2.00	.672x1.656	.062x.101	.178	3′ & 4′	8′	77.	16
¾"—No. 13	91	....	.828x2.00	.672x1.563	.093x.101	.192	3′ & 4′	8′	77	13
¾"—No. 9	205	....	.828x2.00	.500x1.375	.140x.152	.294	3′ & 4′	8′	65	10
1½"—No. 16	45	....	1.333x3.00	1.180x2.813	.062x.115	.296	3′ & 4′	8′	83	16
1½"—No. 13	68	....	1.333x3.00	1.156x2.640	.093x.115	.221	3′ & 4′	8′	83	13
1½"—No. 9	137	....	1.333x3.00	1.125x2.500	.140x.154	.267	3′ & 4′	8′	77	10
Stainless Steel FLATTENED EXPAND-X										
½"—No. 18	69	....	.475x1.26	.297x1.031	.042x.093	.042	3′ & 4′	8′	61	18
½"—No. 16	86	....	.475x1.26	.297x1.031	.052x.093	.052	3′ & 4′	8′	61	16
¾"—No. 18	46	....	.828x2.10	.656x1.813	.042x1.08	.042	3′ & 4′	8′	74	18
¾"—No. 16	57	....	.828x2.10	.672x1.813	.052x.108	.052	3′ & 4′	8′	74	16
¾"—No. 13	88	....	.828x2.10	.578x1.781	.079x.108	.079	3′ & 4′	8′	74	13
¾"—No. 9	198	....	.828x2.10	.500x1.563	.119x.160	.119	3′ & 4′	8′	61	10
1½"—No. 16	43	....	1.333x3.15	1.031x2.875	.052x.124	.052	3′ & 4′	8′	81	16
1½"—No. 13	66	....	1.333x3.15	1.016x2.525	.079x.124	.079	3′ & 4′	8′	81	13
1½"—No. 9	131	....	1.333x3.15	.906x2.658	.119x.165	.119	3′ & 4′	8′	75	10

NOTE 1. Sheet Sizes: 4′x8′ and 6′x12′

NOTE—All dimensions and weights are approximate

Aluminum EXPAND-X

Styles Available	Wt. Lbs. C Sq. Ft.	Diamond Size a x b inches	Opening Size f x g inches	Strand c x d inches	Overall Thickness e inches	Standard Sheet Size		Per Cent Open Area	B & S Gauge No.	Equivalent Thickness In Steel (USS Gauge No.)
						width	length			
½″—No. .051	27	.507x1.195	.375x .950	.051x.089	.152	3′ & 4′	8′	65	16	18
½″—No. .081	41	.507x1.195	.375x .890	.081x.089	.178	3′ & 4′	8′	65	12	14
¾″—No. .051	17	.880x2.000	.700x1.640	.051x.095	.192	3′ & 4′	8′	78	16	18
¾″—No. .081 (Lt.)	25	.880x2.000	.700x1.640	.081x.095	.211	3′ & 4′	8′	78	12	14
¾″—No. .081 (Hvy.)	37	.880x2.000	.734x1.640	.081x.141	.270	3′ & 4′	8′	68	12	14
¾″—No. .125	65	.878x2.000	.650x1.500	.125x.160	.320	3′ & 4′	8′	74	8	11
1½″—No. .081	19	1.350x3.000	1.200x2.563	.081x.112	.226	3′ & 4′	8′	83	12	14
1½″—No. .125	43	1.330x3.000	1.130x2.400	.125x.160	.340	3′ & 4′	8′	85	8	11

Aluminum FLATTENED EXPAND-X

Styles Available	Wt. Lbs. C Sq. Ft.	Diamond Size a x b inches	Opening Size f x g inches	Strand c x d inches	Overall Thickness e inches	width	length	Per Cent Open Area	B & S Gauge No.	Equivalent Thickness In Steel (USS Gauge No.)
½″—No. .051	25	.509x1.250	.328x1.000	.045x.091	.045	3′ & 4′	8′	64	16	18
½″—No. .081	39	.525x1.271	.297x1.000	.067x.103	.067	3′ & 4′	8′	59	12	14
¾″—No. .051	16	.893x2.125	.625x1.750	.040x.104	.040	3′ & 4′	8′	76	16	18
¾″—No. .081 (Lt.)	24	.893x2.125	.635x1.750	.070x.120	.070	3′ & 4′	8′	72	12	14
¾″—No. .081 (Hvy.)	36	.893x2.125	.547x1.750	.070x.165	.070	3′ & 4′	8′	63	12	14
¾″—No. .125	61	.878x2.140	.570x1.640	.106x.180	.106	3′ & 4′	8′	58	8	11
1½″—No. .081	18	1.375x3.125	1.094x2.625	.055x.144	.055	3′ & 4′	8′	77	12	14
1½″—No. .125	40	1.313x3.150	.950x2.500	.106x.190	.106	3′ & 4′	8′	71	8	11

AVAILABLE METALS

CARBON STEEL

Units are formed from soft open hearth steel sheets.

Finishes—Carbon steel EXPAND-X and Flattened EXPAND-X Expanded Metal is shipped unpainted and without special finishes. EXPAND-X will take most any type of coating. Nickel, chrome, copper, or vacuum plating; porcelain enameling or a good paint job can be given to this material because it has a smooth surface and is readily adapted to high grade finishing. Both EXPAND-X and Flattened EXPAND-X can be rubber coated either by the anodic process or by dipping.

STAINLESS STEEL

Units are formed from alloy Type 304, 18-8 (18 chrome, 8 nickel) austenitic stainless sheets. Certain other alloy types of expanded stainless steel can be furnished upon request.

Finish—Shipped unbuffed and unpolished.

ALUMINUM

Units are formed from aluminum alloy type 3003-H14. While other alloy types may be adaptable to expanding, 3003-H14 was found to be best suited to the expanding operation, and was also chosen because of its wide utility, high corrosion resistance, adequate strength, and low cost. Units formed from this alloy can be either anodized or porcelain enameled.

Finish—Shipped unbuffed and unpolished.

ORDERING INFORMATION

Style—The style numbers designated the various meshes. The first figure is the nominal width of the diamond. The second figure identifies the style. In some cases, this figure corresponds with the gauge of the sheet before expanding. Specify regular or flattened sheets.

Specifying Sheet Size

Width—The width of the sheet is measured the *short way of the diamond* (SWD).

Length—The length of the sheet is measured the *long way of the diamond* (LWD).

When ordering expanded metal specify "SWD" and "LWD" after the width and length of the sheet. Give width of the sheet first.

Example: A sheet 36″ the short way of the diamond by 96″ the long way of the diamond should be written.—

36″ SWD x 96″ LWD

(Note SWD dimension is given first)

TYPES OF SHEARING AVAILABLE

SIDE SHEARING—(Parallel to long dimension of diamond.)

Random (Type "A") Shearing—Cut to width (SWD) specified, with tolerance of plus or minus 1/16″. This type of shearing will usually leave jagged edges.

Bond (Type "AA") Shearing—Cut on center line of first bond *over* specified width. Tolerance, minus 0, plus ½ diamond.

Limitations: Bond shearing cannot be furnished on meshes smaller than ½″ nor on ½″ No. 40 or ¾″ No. 34 EXPAND-X or Flattened EXPAND-X.

Sizing—(Flattened EXPAND-X only). Sizing is an operation that provides Bond shearing, and stretching to a specified width (SWD). Limited to ¾″ and 1½″ meshes in carbon steel only, not heavier than No. 13 gauge. All orders for sized Flattened EXPAND-X subject to our ability to produce. Sizing tolerance is plus or minus 1/16″.

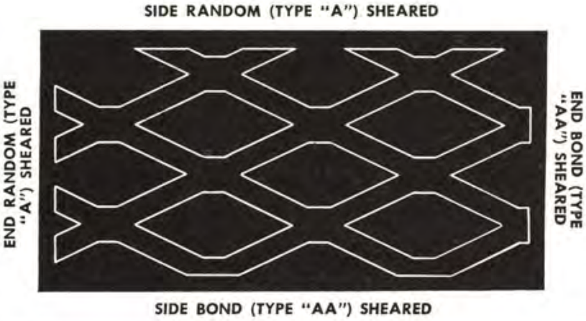
END SHEARING—(Parallel to short dimension of diamond.)

Random (Type "A") Shearing—Cut to length (LWD) specified, with tolerance of plus or minus 1/16″. This type of shearing will usually leave prongs at both ends.

Bond (Type "AA") Shearing—Cut to length (LWD) specified, with tolerance of plus or minus 1/16″. One end to be cut on center line of bond.

Exception: When orders specify bond cutting *both ends*, material will be sheared to nearest bond over specified dimension. Tolerance will be minus 0, plus ½ diamond.

SQUARENESS—Maximum "out of squareness" of all sheared material (when all four sides are sheared), shall not exceed 1/16″ per foot of length.


SIDE RANDOM (TYPE "A") SHEARED
END RANDOM (TYPE "A") SHEARED
END BOND (TYPE "AA") SHEARED
SIDE BOND (TYPE "AA") SHEARED

DECORATIVE EXPANDED METALS

DESCRIPTION

The six decorative patterns of USG Expanded Metal, ARMORWEAVE, FESTOON, CATHEDRAL, WAVELENGTH, RONDO and MIN-X, offer the Architect and Designer countless new design possibilities. These attractive, functional and economical materials are produced in both aluminum and carbon steel.

In manufacture, sheets of metal are slit and cold-drawn into continuous mesh patterns. The strands and bonds of the resulting meshes come to rest at a sharp angle to the original sheet. This makes the expanded mesh more rigid than a solid sheet and gives it a three-dimensional effect which adds texture. USG Expanded Metal in this form is called "Type R". For applications where a smooth surface is desired, a flattened form of each pattern except ARMORWEAVE and 1″ CATHEDRAL is produced by cold-rolling the mesh after expansion. Flattened meshes are designated as "Type F".

NOTE REGARDING POSITIONING: You may wish to rotate the expanded metal 90° or 180° from the positions shown in the adjacent photographs. This will achieve varying effects particularly with styles such as FESTOON, WAVELENGTH *and* CATHEDRAL *and positioning of the mesh should be indicated on your drawings.*

ARMORWEAVE, a sturdy, massive, handsome mesh pattern, is produced in ½″, 1½″ and 4″ styles to adapt to varying proportion requirements. Its wide-offset strands and bonds give ARMORWEAVE several unique and valuable properties. Because of them, ARMORWEAVE has excellent shading and concealing power, pleasing depth and texture, and added strength and rigidity. Yet this mesh retains a high percentage of open area for passage of air and usable light. These reasons make ARMORWEAVE an ideal material to use for ventilation panels and grilles in appliances and other consumer goods.

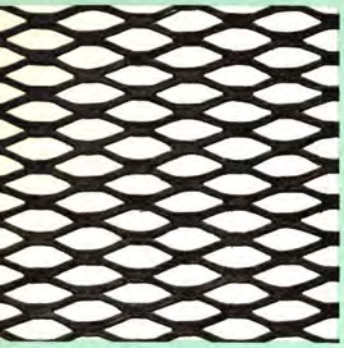
ARMORWEAVE has many potential architectural applications too. Its properties make it a practical, and economical, material to specify for exterior facias and sunshades. ARMORWEAVE placed vertically gives 100% shading at a 45° profile angle. In many cases, initial savings on air-conditioning equipment will more than pay for the entire ARMORWEAVE sunshading installation.

FESTOON, a light, airy mesh pattern with a maximum percentage of open area is also produced in ½″, 1½″ and 4″ styles. Combined with its attractive appearance, these characteristics make it an excellent material to specify for space dividers, decorative grilles, railing guards, etc.

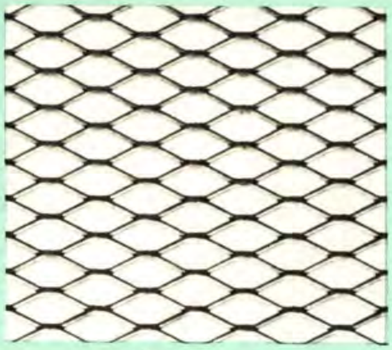
CATHEDRAL, with its long, thin modern lines, may be placed as shown or rotated 90° to provide a horizontal or vertical accent.

MIN-X, a miniature mesh, is produced in five strand widths to give it a wide range of concealing power. This light-weight mesh is perfect for many grille and ornamental trim applications.

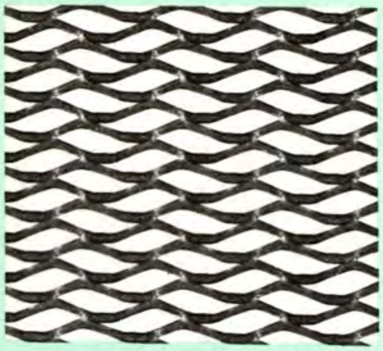
WAVELENGTH & RONDO. The unique and distinctive appearance of these two meshes warrants their consideration for many uses; particularly adaptable as accent points and decorative grilles and railing guards.



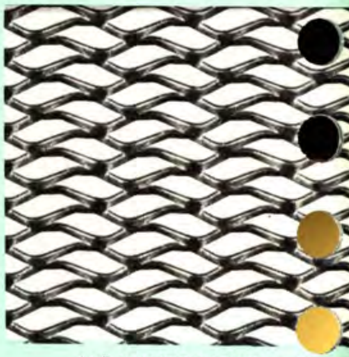
3/16″ MIN-X Type F



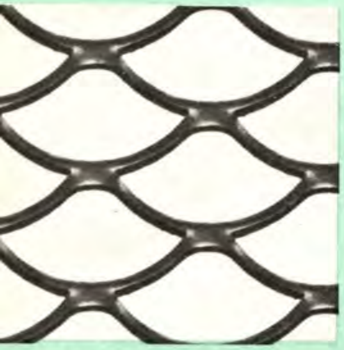
3/16″ MIN-X Type R



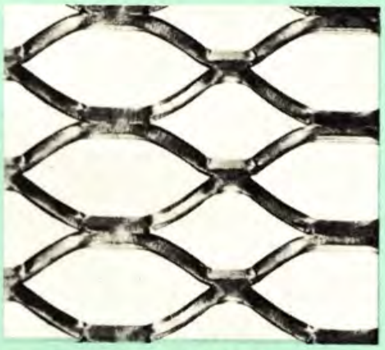
3/16″ WAVELENGTH Type F



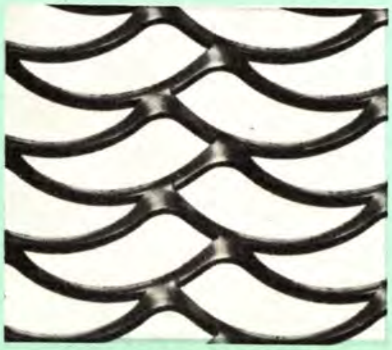
3/16″ WAVELENGTH Type R



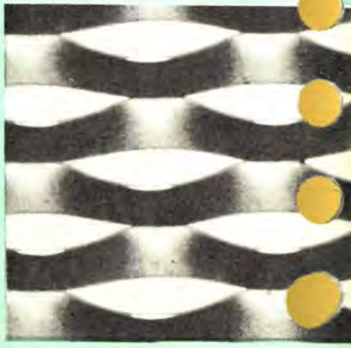
½″ FESTOON Type R



½″ RONDO Type R



½″ WAVELENGTH Type R



½″ ARMORWEAVE Type R

FUNCTION & UTILITY

Practical as Well as Beautiful—USG Expanded Metals are lighter, yet more rigid than a solid sheet. They will not ravel when cut, are readily fabricated with standard equipment and techniques, may be framed with standard sections and attached by welding, bolting or riveting. Typical edging and framing materials and details are shown on Pages 14 and 15.

Finishes Beautifully—The potential of USG Expanded Metal for architectural use is enhanced by the variety of finishes which may be applied to provide appropriate color and also added corrosion resistance. It is recommended that aluminum meshes which are to be erected without finishing be thoroughly cleaned before erection to eliminate dirt, soot and oils which could have accumulated. See table of common finishing techniques on page 13.

Provides Opportunity for Design Creativity—The USG Decorative Expanded Metals provide a design motif about which the individual can exercise his personal creativity.

Appropriate Visibility Through the Mesh—A wide range of translucency is afforded by the various mesh designs, yet all retain a high percentage of open area for passage of light and air.

RECOMMENDATIONS & LIMITATIONS

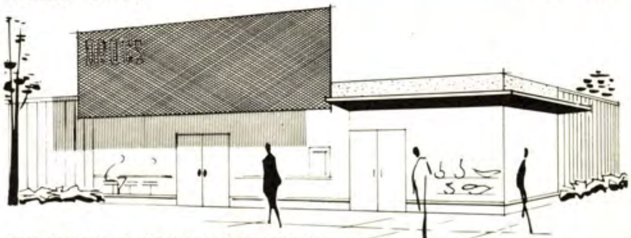
If an aluminum mesh is attached to a steel frame, a gasket of rubber or other non-conductor should be used to prevent galvanic corrosion.

The mesh should be rigidly attached to the framing at approximately 6″ centers.

Bending decorative expanded metal on a very short radius, particularly when repeated, may cause fracturing.

ROOM DIVIDER

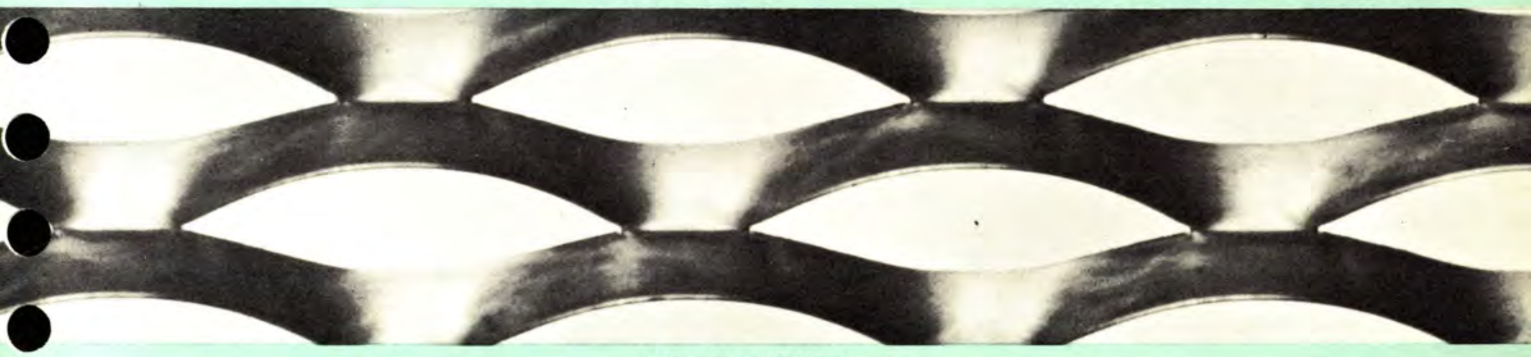
HI FI GRILLE



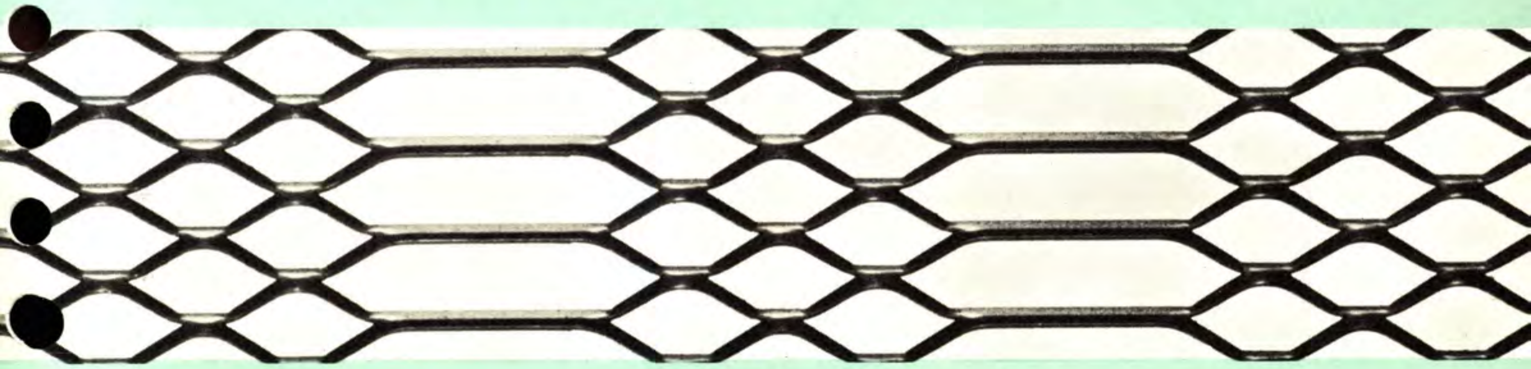
SUNSHADE & DECORATIVE FRONT

All USG Expanded Metals should be thoroughly cleaned before finishing or erection. See page 13 for detailed recommendation.

Contact your USG representative for assistance in working out specific problems concerning design, fabrication, finishing and attachment.



1½″ ARMORWEAVE Type R

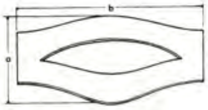
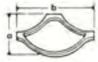
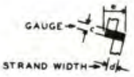
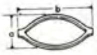
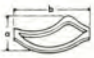
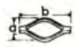


½″ CATHEDRAL Type R

DECORATIVE EXPANDED METAL

TECHNICAL DATA

(ALL DIMENSIONS AND WEIGHTS ARE APPROXIMATE.)
"a" = SWO (Short Way of the Opening.) "b" = LWO (Long Way of the Opening.)

Pattern	Material	Reg. Flat.	Style Designation	Design Size a x b (inches)	Opening Size (inches)	Strand Size c x d (inches)	Overall Thickness e (inches)	Standard Sheet Size		Per Cent Open Area	Wt.—lbs. Per 100 Sq. Ft.
								Width (SWO)	Length (LWO)		
ARMORWEAVE	Carbon Steel	R	½" #20	.6 x1.20	.410x .938	.036x.200	.219	4'	8'	34	100
			½" #18	.6 x1.20	.375x .938	.048x.200	.219	4'	8'	34	133
			½" #16	.6 x1.20	.375x .938	.060x.200	.219	4'	8'	34	166
			1½" #20 (L)	1.33 x3.00	.71 x2.26	.036x.500	.500	4'	8'	25	113
			1½" #20 (H)	1.50 x3.00	.65 x2.28	.036x.675	.600	4'	8'	10	135
			1½" #18 (L)	1.37 x3.00	.70 x2.26	.048x.500	.540	See Footnote 1		27	146
			1½" #18 (H)	1.50 x3.00	.54 x2.10	.048x.675	.550	See Footnote 1		10	180
			1½" #16 (L)	1.37 x3.00	.70 x2.30	.060x.500	.570	4'	8'	27	183
			1½" #16 (H)	1.50 x3.00	.48 x2.03	.060x.675	.550	4'	8'	10	226
			4" #16 (L)	3.44 x8.00	1.625x6.25	.059x1.25	1.187	4'	8' & 10'	30	182
			*4" #16 (H)	2.75 x8.00	.55 x5.00	.059x1.25	1.00	4'	8' & 10'	20	224
	Aluminum	R	½" .051	.6 x1.20	.375x .938	.051x.200	.219	4'	8'	34	48
			½" .081	.6 x1.20	.350x .938	.081x.200	.219	4'	8'	34	77
			1½" .051 (L)	1.24 x3.00	.52 x2.10	.051x.500	.500	See Footnote 2		21	59
			1½" .051 (H)	1.47 x3.00	.40 x2.00	.051x.675	.470	See Footnote 2		10	67
			1½" .081 (L)	1.26 x3.00	.52 x2.10	.081x.500	.530	See Footnote 1		23	91
			1½" .081 (H)	1.46 x3.00	.43 x2.00	.081x.675	.520	See Footnote 1		10	106
			4" .051 (L)	3.0 x8.00	.76 x6.25	.051x1.25	1.020	4'	8'	10	61
			*4" .051 (H)	2.82 x8.00	.51 x5.65	.051x1.25	.900	4'	8'	25	65
			4" .081 (L)	3.0 x8.00	1.25 x6.00	.081x1.25	1.187	4'	8' & 10'	20	96
			4" .081 (H)	2.75 x8.00	.50 x5.30	.081x1.25	1.00	4'	8' & 10'*	18	103
FESTOON	Carbon Steel	R	½" #20	.625x1.20	.507x .938	.036x.090	.175	4'	8'	71	43
			½" #18	.625x1.20	.500x .938	.048x.090	.175	4'	8'	71	58
			½" #16	.625x1.20	.500x .938	.060x.090	.175	4'	8'	71	72
			1½" #16	1.50 x3.00	1.375x2.625	.060x.112	.217	4'	8'	85	37
			*1½" #13	1.50 x3.00	1.313x2.625	.089x.112	.236	4'	8'	81	56
			*1½" #9	1.50 x3.00	1.25 x2.50	.135x.141	.292	4'	8'	81	110
			*4" #9	3.75 x8.00	3.50 x7.25	.134x.230	.500	4'	8' & 10'	90	68
			*4" #4	3.75 x8.00	3.375x7.0	.223x.230	.500	4'	8' & 10'	88	114
		F	½" #20	.688x1.20	.550x1.00	.030x.100	.030	8'	4'	64	39
			½" #18	.688x1.20	.540x1.00	.040x.100	.040	8'	4'	64	52
			½" #16	.688x1.20	.540x1.00	.051x.100	.051	8'	4'	64	65
			1½" #16	1.688x3.00	1.438x2.625	.052x.125	.052	8'	4'	79	34
			*1½" #13	1.688x3.00	1.438x2.625	.071x.140	.071	8'	4'	81	51
			*1½" #9	1.75 x3.00	1.25 x2.50	.110x.204	.110	8'	4'	75	101
Typical Type-R Bond Cross Section	Aluminum	R	½" .051	.625x1.20	.507x .938	.051x.090	.175	4'	8'	71	21
			½" .081	.625x1.20	.467x .938	.081x.090	.175	4'	8'	71	33
			*1½" .081	1.375x3.00	1.25 x2.625	.081x.112	.250	4'	8'	83	19
			*1½" .125	1.50 x3.00	1.25 x2.563	.125x.141	.250	4'	8'	81	34
			*4" .250	3.375x8.00	3.0 x6.75	.250x.356	.625	4'	8' & 10'	82	76
		F	½" .051	.688x1.20	.550x1.00	.043x.100	.043	8'	4'	64	19
			½" .081	.688x1.20	.580x1.00	.069x.100	.069	8'	4'	64	30
			*1½" .081	1.75 x3.00	1.375x2.625	.065x.160	.065	8'	4'	74	17
			*1½" .125	1.75 x3.00	1.375x2.563	.100x.190	.100	8'	4'	70	31
RONDO	Carbon Steel	R	½" #20	.520x1.195	.469x .938	.036x.089	.163	4'	8'	65	52
			½" #18	.520x1.195	.438x .938	.048x.089	.163	4'	8'	65	71
			½" #16	.520x1.195	.438x .938	.060x.089	.163	4'	8'	65	86
		F	½" #20	.625x1.195	.500x .938	.030x.100	.030	8'	4'	59	47
			½" #18	.625x1.195	.438x .938	.040x.100	.040	8'	4'	59	64
			½" #16	.625x1.195	.469x .938	.051x.100	.051	8'	4'	59	78
	Aluminum	R	½" .051	.520x1.195	.438x .938	.051x.089	.163	4'	8'	65	25
			½" .081	.520x1.195	.408x .938	.081x.089	.163	4'	8'	65	40
		F	½" .051	.625x1.195	.500x .938	.043x.100	.043	8'	4'	59	23
			*½" .081	.625x1.195	.475x .938	.069x.100	.069	8'	4'	59	36
WAVELENGTH	Carbon Steel	R	*½" #20	.555x1.20	.468x .938	.036x.103	.171	4'	8'	63	55
			½" #18	.555x1.20	.438x .938	.048x.103	.171	4'	8'	63	74
			*½" #16	.555x1.20	.438x .938	.060x.103	.171	4'	8'	63	92
			*3/16" #26	.200x .500	.115x .420	.018x.050	.077	2'	4'	57	38
			*3/16" #24	.200x .500	.110x .400	.024x.050	.084	2'	4'	55	50
			*3/16" #22	.200x .500	.105x .380	.030x.050	.091	2'	4'	53	63
		F	*½" #20	.625x1.20	.500x .938	.030x.112	.030	8'	4'	57	50
			½" #18	.625x1.20	.375x .938	.040x.112	.040	8'	4'	57	67
			*½" #16	.625x1.20	.375x .938	.051x.112	.051	8'	4'	57	83
			*3/16" #26	.200x.522	.095x .430	.015x.050	.015	2'	4'	47	36
			*3/16" #24	.200x.523	.090x .420	.020x.055	.020	2'	4'	45	48
			*3/16" #22	.200x.525	.080x .410	.025x.060	.025	2'	4'	40	60
	Aluminum	R	½" .051	.555x1.20	.438x .938	.050x.103	.171	4'	8'	63	27
			*½" .081	.555x1.20	.410x .938	.081x.103	.171	4'	8'	63	43
		F	½" .051	.625x1.20	.500x .938	.043x.112	.043	8'	4'	57	25
			*½" .051	.625x1.20	.475x .938	.068x.112	.068	8	4'	57	39
MIN-X	Carbon Steel	R	*3/16 #26 034 str	.188x.500	.150x.360	.018x.034	.064	2'	4'	80	27
			*3/16 #24 034 str	.188x.500	.140x.355	.024x.034	.067	2'	4'	75	36
			3/16 #22 034 str	.188x.500	.130x.350	.030x.034	.071	See Footnote 3		69	45
		F	*3/16" #26 034 str	.188x.520	.125x.400	.015x.040	.015	2'	4'	67	26
			*3/16" #24 034 str	.188x.522	.120x.390	.020x.035	.020	2'	4'	64	35
			3/16" #22 034 str	.188x.523	.120x.380	.025x.035	.025	See Footnote 3		64	43
	Aluminum	R	*3/16" .032 034 str	.188x.500	.140x.350	.032x.034	.068	2'	4'	75	17
		F	*3/16" .032 034 str	.188x.525	.110x.360	.027x.040	.027	2'	4'	59	16

MIN-X is produced in .050", .060", .070" and .080" strand widths on special order.

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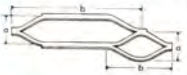
*Produced on special order. (H) = Heavy Strand (L) = Light Strand

Footnote 1—Sheet Sizes are 4' x 8', 6' x 8', and 6' x 6'3"
2—Sheet Sizes are 4' x 8', 6' x 8', 6' x 6'3", and 8' x 4'
3—Sheet Sizes are 2' x 4', and 3' x 8'

TECHNICAL DATA—continued

Pattern	Material	Reg. Flat.	Style Designation	Design Size a x b (inches)		Opening Size (inches)		Strand Size c x d (inches)	Overall Thickness e (inches)	Standard Sheet Size		Per Cent Open Area	Wt.—lbs. Per 100 Sq. Ft.
				SHORT	LONG	SHORT	LONG			Width (SWO)	Length (LWO)		
CATHEDRAL 	Carbon Steel	R	½" #20	.458x1.0	.458x2.0	.344x.75	.344x1.75	.036x.089	.175	4′	8′	61	58
			½" #18	.458x1.0	.458x2.0	.344x.75	.344x1.75	.048x.089	.175	4′	8′	61	77
			½" #16	.458x1.0	.458x2.0	.344x.75	.344x1.75	.060x.089	.175	4′	8′	61	97
			1" #16	1.0x2.0	1.0x4.0	.750x1.5	.750x3.5	.0625x.200	.343	4′	8′	75	99
		F	½" #20	.534x1.0	.534x2.0	.344x.75	.344x1.75	.033x.092	.033	8′	4′	58	53
			½" #18	.540x1.0	.540x2.0	.344x.75	.344x1.75	.044x.092	.044	8′	4′	58	70
			½" #16	.562x1.0	.562x2.0	.344x.75	.344x1.75	.052x.092	.052	8′	4′	58	89
	Aluminum	R	½" .051	.458x1.0	.458x2.0	.344x.75	.344x1.75	.051x.089	.175	4′	8′	61	28
			½" .081	.458x1.0	.458x2.0	.344x.75	.344x1.75	.081x.089	.175	4′	8′	61	45
			1" .081	1.0x2.0	1.0x4.0	.750x1.5	.750x3.5	.081x.200	.343	4′	8′	75	46
		F	½" .051	.562x1.0	.562x2.0	.344x.75	.344x1.75	.046x.095	.046	8′	4′	58	26
			½" .081	.562x1.0	.562x2.0	.313x.75	.313x1.75	.068x.100	.068	8′	4′	58	41
SMALL DECORATIVE MESHES	Carbon Steel	R	3/32" #26 .040 Honeycomb	.110x.240		.030x.120		.018x.040	.053	2′	4′	27	54
			3/32" #24 .040 Honeycomb	.110x.240		.030x.120		.024x.040	.056	2′	4′	27	73
			1/8" #26 .040 Honeycomb	.140x.300		.060x.180		.018x.040	.065	2′	4′	43	43
			1/8" #24 .040 Honeycomb	.140x.300		.070x.170		.024x.040	.068	2′	4′	50	57
			5/16" #22 Festoon	.300x.600		.200x.460		.030x.060	.098	4′	4′	67	50
			5/16" #22 Armorweave	.300x.600		.120x.430		.030x.100	.120	4′	4′	40	83
			1/4" #20 Display-mesh	.250x.500		.160x.350		.036x.050	.099	4′	4′	64	60
			1/4" #18 Display-mesh	.250x.500		.150x.320		.048x.050	.105	4′	4′	60	80
	Aluminum	R	3/32" .020—.025 Demi	.090x.240		.040x.120		.020x.025	.043	2′	4′	45	15
			3/32" .020—.040 Honeycomb	.110x.240		.030x.120		.020x.040	.055	2′	4′	27	21
			1/8" .020—.040 Honeycomb	.140x.300		.060x.180		.020x.040	.065	2′	4′	43	16
			5/16" .040 Festoon	.300x.600		.200x.450		.040x.060	.103	4′	4′	67	23
			5/16" .040 Armorweave	.300x.600		.110x.410		.040x.100	.133	4′	4′	37	38

AVAILABLE METALS

CARBON STEEL units are formed from soft open hearth steel sheets.

Finishes—Carbon steel decorative expanded metal Type R and Type F is shipped unpainted and without special finishes. Decorative expanded metal will take most any type of coating. Nickel, chrome, copper, or vacuum plating; porcelain enameling; or a good paint job can be given to this material because it has a smooth surface and is readily adapted to high grade finishing. Both Type F and Type R decorative expanded metals can be rubber coated either by the anodic process or by dipping.

ALUMINUM units are formed from aluminum alloy type 3003-H14. While other alloy types may be adaptable to expanding, 3003-H14 was found to be best suited to the expanding operation, and was also chosen because of its wide utility, high corrosion resistance, adequate strength, and low cost. Units formed from this alloy can be either anodized or porcelain enameled.

Finish—Shipped unbuffed and unpolished.

ORDERING INFORMATION

Terminology

Type R. Regular decorative expanded metal

Type F. Cross-rolled Flattened expanded decorative metal

Sheet Sizes

Type R: 4′ Short Way Opening (SWO) x 8′ Long Way Opening (LWO)

Type F: 9′ Short Way Opening (SWO) x 4′ Long Way Opening (LWO) (See below)

Type F is shipped in untrimmed sheets unless otherwise specified. Customer will be charge for 8′ x 4′ area but will receive oversize sheets with up to 1" camber. (Length of Type F untrimmed sheets; up to 4" longer in 8′ dimensions.)

Where specifically requested, Type F may be furnished Random (Type "A") sheared to 8′ x 4′. (Random shearing usually leaves prongs along both 8′ sides of the sheet.)

TYPES OF SHEARING AVAILABLE

(Refer to shearing diagram page 7)

SIDE SHEARING—(Parallel to long dimension of opening.)

Random (Type "A") Shearing—Cut to width (SWO) specified, with tolerance of plus or minus 1/16". This type of shearing will usually leave jagged edges. Note: 4" ARMORWEAVE cannot be random sheared.

Bond (Type "AA") Shearing—Cut on center line of first bond over specified width. Tolerance, minus 0, plus ½ diamond.

Limitations: AA shearing cannot be furnished on Type F decorative expanded metal.

END SHEARING—(Parallel to short dimension of opening.)

Random (Type "A") Shearing—Cut to length (LWO) specified, with tolerance of plus or minus 1/16". This type of shearing will usually leave prongs at both ends.

Bond (Type "AA") Shearing—Cut to length (LWO) specified, with tolerance of plus or minus 1/16". One end to be cut on center line of bond. Available on Type R only.

SQUARENESS—Maximum "out of squareness" of all sheared material (when all four sides are sheared), shall not exceed 1/16" per foot of length.

ARCHITECTURAL SPECIFICATION:

SCOPE: The Contractor shall supply all labor, material and equipment to install the specified pattern of USG Expanded Metal in all areas where shown on the drawings.

MATERIALS: Expanded Metal pattern used shall be (specify by complete style designation). (Example: 1½" .081 USG Aluminum ARMORWEAVE Expanded Metal—Type "R".) The Contractor should be advised if finish on the Expanded Metal is required, i.e., anodized, etc.

EXPANDED METALS IN EXTERIOR USES

SUNSHADING

Sunshading of glass areas has become increasingly important to architects because of its effect on air conditioning costs. Today's buildings are being designed with as much as three times the glass area of those in the 1920's. Tripling of the transparent area approximately doubles the cooling load on air conditioning equipment.

One of the ways of controlling and reducing air conditioning loads is with an exterior shading device which acts as a barrier to the heat of the sun's rays. Because of its wide strand ARMORWEAVE Decorative Expanded Metal is ideally suited for sunshading as a horizontal overhang, vertical screen or entire building facia.

Shading Characteristics Of Armorweave

In the summer, the sun is higher in the sky than it is in winter. A well-designed shading device will keep out the heat of the summer sun and yet not interrupt the welcome heat of the winter sun.

ARMORWEAVE provides protection from the summer sun's rays at peak conditions and throughout the cooling season. It also allows sunlight to pass, during the winter months.

The several styles of ARMORWEAVE available, give architects a choice of materials to meet various sunshading requirements. ½", 1½" and 4" (L) ARMORWEAVE placed vertically give 100% shading at a 45° profile angle. For more critical sunshading requirements, 1½" and 4" (H) ARMORWEAVE—a heavier strand material created especially for use as a sunshade—gives 100% shading at a 36° profile angle.

The table below shows shading percentages of ARMORWEAVE placed vertically for various profile angles of the sun. The profile angle defines many positions of the sun (see definition below) and, therefore, has been chosen as a reference.

(The slope of the bond in the ARMORWEAVE is down and toward the sun, to provide maximum shading and these results.)

Shading

Percent Shading—Armorweave	Profile Angle—Degrees						
	0	10	20	30	36	40	45
½", 1½" and 4" (L) Styles	63	71	79	87	—	96	100
1½" and 4" (H) Styles	73	81	88	95	100	100	100

(L)—Light Strands (H) Heavy Strands

PROFILE ANGLE—The angle through which a horizontal plane must be rotated about a horizontal axis located in the plane of the ARMORWEAVE *Expanded Metal in order to include the position of the sun. The profile angle, sometimes called the shadow angle, is used on sectional drawings to calculate the positions and dimensions of shading devices.*

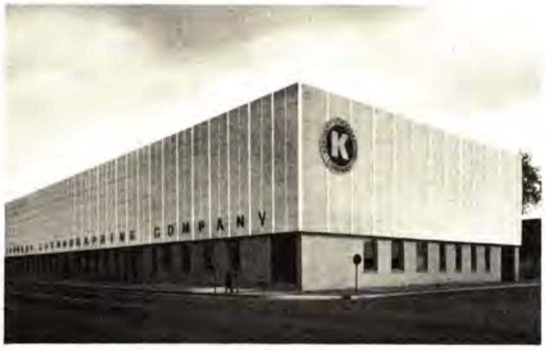
Advantages Of Armorweave As A Sunshade

ARMORWEAVE is an efficient and practical "sunshading" material. This versatile expanded metal shuts out unwanted glare—and heat—by shading the openings in wall areas, yet permits passage of needed light, as well as air. Screening out heat increases comfort indoors, substantially lowers air conditioning costs. While cutting down on the heat of the summer sun, it does not minimize the warmth of the winter sun.

ARMORWEAVE used as a sunshade gives nearly 180° of horizontal outlook and still affords desirable privacy from the stares of passersby to those inside the building.

Architects can create their own designs and effects with this expanded metal, as it can be adapted to most modules. It is right in line with the trend to decorative grillwork. Easily fabricated to standard lightweight steel or aluminum framing sections, ARMORWEAVE with ordinary proper attachments, is sufficiently strong to perform satisfactorily under the severest wind conditions.

BEFORE Remodeling



AFTER Remodeling with USG Armorweave Expanded Metal

ARMORWEAVE is all in one piece and has no moving parts to rely upon for effectiveness. It is relatively maintenance free when finished with porcelain enamel, anodized or plastic coatings for full weather protection.

*A technical pamphlet entitled "*ARMORWEAVE *for Sunshading" is available from U.S.G. Sales Offices should more information on this subject be required.*

WIND LOAD TESTS ON ARMORWEAVE

In August 1958, wind tunnel tests of ARMORWEAVE expanded metal panels were conducted by the University of Wichita, Department of Engineering Research, Wichita, Kansas. The tests were conducted on 4' x 4' panels of ½"—18 and 1½"—18 carbon steel ARMORWEAVE.

The results of these tests showed that, with ordinary proper attachments, 1½" –18 ARMORWEAVE when used on the exterior of buildings will perform satisfactorily under the most severe wind conditions. Furthermore, vibrations noticed during the tests were inconsequential and would not cause fatigue of the ARMORWEAVE nor a gross increase in the stress due to resonance.

Comparison With Flat Plate

The tests showed the normal load on 1½"—18 ARMORWEAVE is no greater than 55% of the normal load on a solid flat plate. The tests also indicated the normal load on ½"—18 ARMORWEAVE is equal to the 1½" style.

Because of the airfoil design of ARMORWEAVE, similar to an upside down airplane wing, a downward force results from a wind load condition. This downward force varies from 7.7 lb. per sq. ft. (of ARMORWEAVE) for a 71 mph. wind, to 20.0 lb. per sq. ft. for a 112 mph. wind.

The small numerical value of the side force makes it negligible.

For more specific information on the wind loading of ARMORWEAVE, contact the U.S.G. Sales Office and ask for the technical pamphlet entitled "Data and Application of the Wichita Wind Load Tests".

The background design is a full size projection of 4" ARMORWEAVE.

FINISHES

The increasing use of USG Expanded Metals in architecture, interior decoration and product design is due in part to its adaptability to metal finishing processes which add appropriate color and extra corrosion resistance to the native attractiveness of the meshes.

USG Expanded Metals are regularly produced by expanding sheets of aluminum alloy 3003 H-14 or mild open-hearth scale free, low carbon steel, or type 304 stainless steel. Most finishes, adaptable to these metals can be applied to their expanded form.

Anodized Finishes

Aluminum owes its corrosion resistance to a natural oxide coating which protects the metal. Alloy 3003 used in USG Aluminum Expanded Metal is one of the most corrosion resistant commercial alloys. However, since aluminum may weather on long exposure, and is subject to attack by certain combinations of sea air, high humidity and industrially contaminated atmospheres, protective surface treatments are often specified.

The most common surface treatments for aluminum are the anodizing processes in which an added oxide coating is formed electrochemically on the metal. This anodic coating is applied by finishers located throughout the country.

Anodic coatings usually decorate as well as protect. The coating is minutely porous when originally formed and may be colored by various dyes and pigments. Subsequent treatment closes the pores, and the color and coating become an integral part of the metal.

The cost and protection afforded by anodic coatings depends largely on their thickness. An .00025″ coating is recommended for interior use where minimum abrasion resistance is needed. An .0004″ coating is used for interior or maintained exterior applications under medium abrasion conditions. An .0008″ coating is recommended for exterior use and has high abrasion resistance.

Alloy 3003 takes anodic films with a permanence and color match within standard commercial limits. However, variations in the alloy and the anodizer's process will effect both permanence and color match.

The Aluminum Company of America has developed a carefully controlled anodizing process, Alcoa—Architectural Color Finish, specifically for unmaintained exterior aluminum. Where all phases of the recommended procedure are followed, this finishing process is designed to give increased weather resistance, a high degree of color permanency and excellent color match.

Alcoa Architectural Color Finishes may be applied only to "Anoclad" or equivalent sheets. These sheets are rolled with a thin clad surface very carefully controlled and tested as to alloying constituents and impurities. The composition of this surface cladding is varied to achieve particular effects. Expanding exposes an edge of base alloy where the clad sheet is cut in the expanding operation. *This may* produce a slight two-tone effect after finishing, which we believe is attractive.

Porcelain Enamel Finishes

Porcelain enamel offers the architect or designer an unlimited variety of colors obtainable with mineral oxides. The colors are permanent and will not fade, peel or deteriorate with age. Building exteriors have long been finished in porcelain enamel because it will successfully withstand severe weather conditions of all kinds.

Porcelain enamel is unaffected by common acid or alcohol found in the home. The glass-like surface of porcelain enamel means it is easily cleaned; resistant to severe abrasion and fire resistant.

Porcelain enamel finishes have a tendency to flake or spall off when they are hit with a hammer or receive a sharp impact. All fabrication such as cutting, drilling, welding or forming of expanded metal panels should be completed before porcelain enameling.

Porcelain enamel finishes can be applied to standard stock sheets of USG Expanded Metal by enamelers located throughout the country. The steel and aluminum alloys used in making USG Expanded Metal have been found by trial to be compatible to porcelain enameling. Contrary to common belief, the porcelain enamel can be applied to completely coat the strands and bonds of the expanded metal, including the sharp corners.

Painting, Plating, Enameling And Plastic Finishes

All USG Expanded Metals are produced from scale-free metal and thus do not present special problems to finishers. Painting is best accomplished with spray or deep nap roller, since the edges and corners of the mesh may be injurious to brushes. The meshes readily adapt to standard methods of applying hot-dip galvanize, electro-plate, and baked enamel finishes. Plastic finishes have been applied successfully by dipping, spraying and surface cladding prior to sheet expansion.

Cleaning

Provision should always be made to clean USG Expanded Metal prior to finishing; and most finishers include this as a standard procedure. The carbon steel styles are shipped lightly oiled by us. A solvent or acid dip followed by water rinsing is a common cleaning method. For smaller projects the expanded metal may be wiped clean with a solvent.

The aluminum styles may also have oily surface deposits picked up during rolling of the sheets by the aluminum producer or from our expanding machines. Because of possible dust accumulation, it is recommended to clean aluminum meshes which are to be erected without additional finishing. Washing with a mild soap, detergent or non-etching chemical cleaner followed by thorough rinsing and drying, or the use of wax base and non-wax base polish cleaners, are two methods recommended by aluminum producers.

FINISHES aluminum

ALLOY	TYPE	EXTERIOR	INTERIOR	REMARKS
3003H-14	Unfinished	X	X	Specify surface cleaning prior to erection.
3003H-14	Painted	X	X	Specify surface cleaning prior to painting.
3003H-14	Interior Anodized		X	Resists mild abrasion. Colors generally available natural, red, blue, green, yellow, gold, silver, copper, brass and black.
3003H-14	Exterior Anodized	X	X	Higher abrasion resistance.
3003H-14	Heavy Duty Anodized	X	X	Highest abrasion resistance and resistance to attack by combinations of sea air, humidity and industrially contaminated atmospheres.
3003H-14	Porcelain Enameled	X	X	
6061-0	Porcelain Enameled	X	X	Better structural properties after firing. This alloy expanded on special order only.
	carbon steel			
	Painted	X	X	Steel used has scale-free surface, but is shipped lightly oiled. Specify cleaning prior to finishing.
	Bonderized & Enameled	X	X	
	Galvanized	X	X	
	Plastic Coated	X	X	
	Porcelain Enameled	X	X	Produced from low carbon open hearth steel adaptable to this finish.

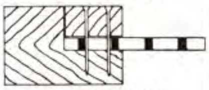
The finishes are generally arranged in ascending order of added initial cost. United States Gypsum does not apply these finishes at our expanded metal plant.

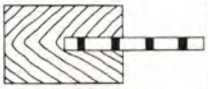
EDGINGS FOR EXPANDED METAL

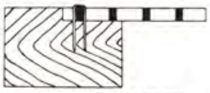
For more effective design and fabrication of products using Expanded Metals, the selection of the proper edging is highly important. Since USG Expanded Metals are readily adapted to various edging materials, the designers choice of edging will usually be governed by the end use of the expanded metal assembly. Shown below is data on various edging materials and how to use them to provide greater flexibility of design, utility, economy and complete safety with USG Expanded Metals.

RIGID

Wood Edging

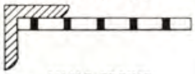

INSERT EDGING

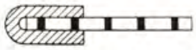

KERFED EDGING

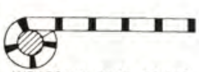

STAPLE APPLICATION

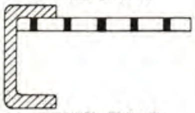
Softwoods are suitable for general utility edgings, however, greater permanence, wearability and beauty are obtained with hardwood edgings. Cost, availability and end use will affect the type of wood used.

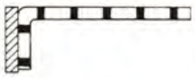
Steel Edging

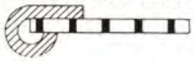

ANGLE EDGING


"U" EDGING


WRAPPING OVER ROUND

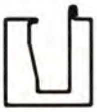

CHANNEL EDGING

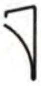

FLAT EDGING

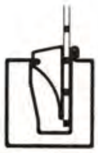

ROLLED EDGING

Steel edgings are popular for their high strength and ease of fabrication. Hot rolled angles, rounds, bars or channels and cold rolled U-edging or other specialty sections are also suitable for edging expanded metal.

Rolled or Extruded Aluminum Edging

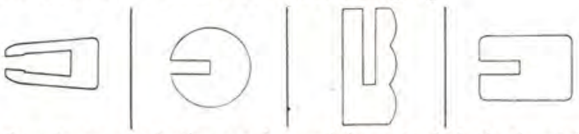

EDGING SECTION


SPRING SPLINE INSERT


ASSEMBLED CROSS SECTION

Rolled or extruded aluminum edgings are best suited for use with USG Aluminum Expanded Metal and should be selected when light weight, beauty, and extra corrosion resistance are required. Specialty shapes may be designed to serve other functions in addition to edging the expanded metal.

SEMI-RIGID . . . Extruded Plastic Edging



Various types of plastics can be used for extruded plastic edgings where light weight and color are needed and strength is not too important.

FLEXIBLE . . . Liquid Plastic Edging

The edges or the full sheet of USG Expanded Metal can be rubber or plastic coated either by anodic process or by dipping, to provide protection, resistance to abrasion and color.

FUNCTION AND UTILITY

RIGID Edgings are used where structural functions are required of the edging material. Secure attachment of the expanded metal to the edging is possible for greater rigidity of the sheet.

Wood Edgings are easily fabricated with standard hand or woodworking tools. Woods suitable for edgings or specially shaped moldings are available from lumber yards or manufacturers of wood moldings. The corners of frames may be either butted or mitered. The latter joint is best for kerfed and insert edgings. Corner joints are fastened by using an adhesive with reinforcing such as nailing, slip feathering, splining or doweling.

The *insert edging* is used where complete covering of the edge is required and only one finished side is needed. Finishing nails or staples are used to fasten the insert.

The *kerfed edging* presents a neat finished appearance in which either side can be used. The kerf holds the expanded metal in place.

The *staple* method of attaching USG Expanded Metal is the fastest and most economical way to apply a wood edging.

Steel Edgings are readily fabricated with standard metal working and welding equipment. They are available from steel supply warehouses or specialty steel fabricators. Hot rolled shapes are generally suitable for edging. Corners may be bent on rounds, squares and flats used on end, but angles, channels and U-Edging are best joined by coping and mitering. Mitered corner and end joints are usually arc welded but other methods of welding may be used. Excess welding materials should be removed to provide clean smooth joints.

Spotwelding the expanded metal to the edging is one of the fastest and simplest methods used. Arc welding can be done if care is taken not to burn the expanded metal.

Rolled or Extruded Aluminum Edgings can be fabricated with standard metal cutting or woodworking machinery. They can be painted or anodized to match the expanded metal. Aluminum supply houses stock a wide variety of standard shapes, or special shapes may be obtained from a manufacturer of roll formed shapes or aluminum extrusions.

Corners are best formed by mitering and welding, brazing or fitting with a mechanical key. The edgings are formed into frames in the same manner as steel edging. Welding the corners and joints improves the strength of the frame but mechanical keys may be used.

In applying the expanded metal to the edging frame, a welded construction is strongest, but mechanical fastening by crimping the edging or fastening with rivets or screws may offer some economies.

SEMI-RIGID Edgings are used where stiffeners and rigidity are required of the edging material and strength is of limited importance.

Extruded Plastic Edgings can be readily fabricated with wood and metal working tools. They may be bent at a low heat, laminated with adhesives and have resistance to abrasions and bending. They can be finished with paint, lacquer or enamel or are available in a wide range of colors. Many shapes are available from plastic extruding companies which make suitable edging shapes, or dies can be developed to make special shapes.

Plastic extrusions are formed by heating, to approximately 180° F. and forming by hand or with male and female dies. They may be cut with band, circular or hand saws and laminated to themselves or other materials with adhesives.

FLEXIBLE Edgings are used as a decorative or protective edging generally on small pieces where strength is obtained through the expanded metal itself. The development and application of plastic edgings and coatings to USG Expanded Metals opens the door to many new uses for this versatile product.

FASTENING & FRAMING DETAILS

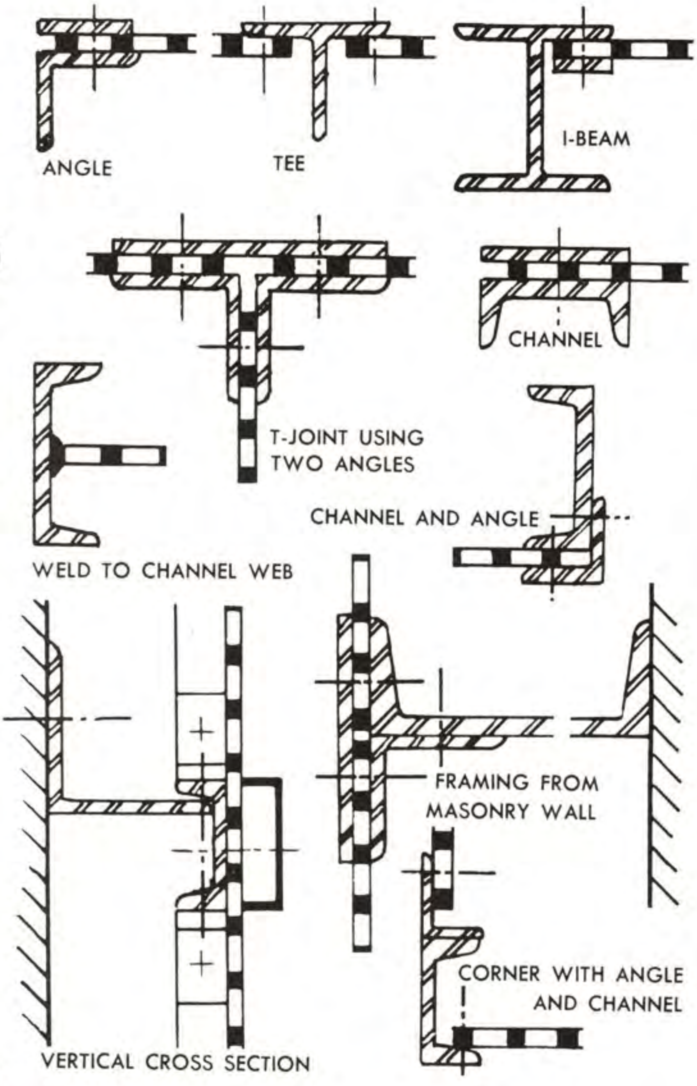
The architectural applications for USG Expanded Metals have increased rapidly since the introduction of USG Decorative Expanded Metal. Produced in both aluminum and steel, these decorative meshes provide a beautiful, functional, and economical material to serve architecturally for exterior sunshades, ornamental grilles, railing guards, space dividers and many other applications.

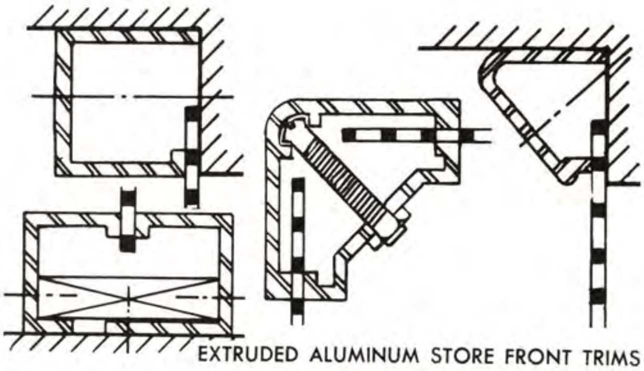
Though USG Expanded Metal is a unique and modern material, it adapts readily to framing sections and fastenings which are common in architectural use. Shown below are a series of typical details for use as a guide to the architect and fabricator.

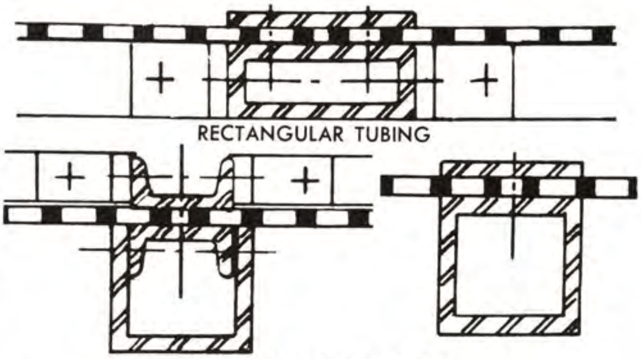
Many hot rolled and cold formed aluminum and steel sections may be used. Examples are shown of typical framings incorporating angles, bars, tees, channels and I-beams. Aluminum extrusions, such as rectangular and square tubing and various types of metal store-front trim, have also found their place as expanded metal framing materials. Shown also are suggestions for grid framing systems for constructing a new facade on an older building. Wood framing methods are shown on Page 14.

Fastening USG Expanded Metals to the supporting framework may be accomplished with self-tapping or sheet metal screws, fastening directly through the strand or opening in the expanded metal. Pull-through type or self-plugging type blind rivets or drive rivets may also be used. Welding at points where the expanded metal is adjacent to framing is also satisfactory.

The services of U.S.G. Sales Engineers and Architect Service Representatives are available to give you further information on specific applications. See Page 16 for a listing of U.S.G. Sales Offices.



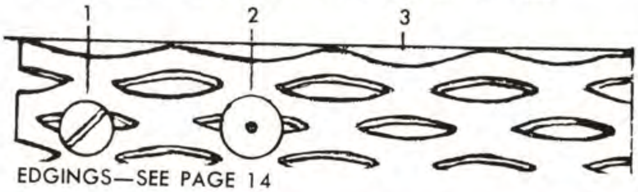

EXTRUDED ALUMINUM STORE FRONT TRIMS



HORIZONTAL CROSS SECTION

Fastening with screws, rivets, or welding

1. Self tapping or sheet metal screws.
2. Pull-through or self plugging type blind rivet or drive rivets.
3. Weld where expanded metal is adjacent to frame.



EDGINGS—SEE PAGE 14

USG* GRATINGS
GRATE-X* EXPANDED METAL GRATING
SAFETY WALK GRATING

For more information on GRATE-X
see our catalog in Sweet's
Architectural File 13a/Un
Industrial Const. File . . 12a/Un
or see the AIA File 14-A-1

GRATE-X is a heavy duty type expanded metal, made of steel plate which is slit and expanded in a cold-drawing operation.

Designed especially for use as light weight open steel flooring. GRATE-X is ideal for flooring, cat walks, platforms, stair treads, etc., where its principal use is for light storage and foot traffic. Many other practical uses are possible.

Economical—A wide selection of sizes and weights is available and its light weight, consistent with high strength makes for a most economical construction.

Extra Safety—The angular ridged surface formed by the multiple junctions of strands provides excellent antislip qualities. The closely-spaced long bond feature of GRATE-X provides greater contact area, resulting in a high traction surface, highly skid-proof yet smooth enough for wheel traffic. Water and oil drain off readily.

PROJECTION MESH is produced with small toothlike projections on the upper surface for maximum anti-skid qualities.

Large Open Area—The angular position of the strands and bonds permits free passage of light and air. Dust cannot accumulate.

GRATE-X TECHNICAL DATA

CARBON STEEL

Style (psf)	Diamond Size Width x Length	Opening Size Width x Length	Strand Size Width x Thickness	Sheet Size Width (SWD) x Length (LWD)
3.0 lb.	1.44″ x5.0″	1.09″ x3.31″	.23″ x.223″	48″x96″** 72″x60″, 96″** or 120″
3.14 lb.	2.00″ x6.0″	1.625″x4.875″	.312″x.250″	48″ or 72″x120″
4.0 lb.	1.395″x5.0″	1.02″ x3.25″	.30″ x.223″	48″, 60″ or 72″x96″** 60″x60″ or 120″
4.27 lb.	1.412″x4.0″	1.0″ x2.88″	.30″ x.250″	48″ or 72″x96″
5.0 lb.	1.143″x5.0″	.72″ x2.88″	.31″ x.223″	48″x60″, 96″** or 120″
6.25 lb.	1.412″x5.0″	.781″x3.125″	.38″ x.284″	48″ or 72″x96″**
7.0 lb.	1.333″x5.0″	.70″ x2.75″	.40″ x.284″	48″x50″ or 100″

**Length shown is nominal, actual length is 97½″.

ALUMINUM

2.0 lb.	1.25″ x5.0″	.73″ x2.88″	.356″x2.50″	60″x60″ or 120″

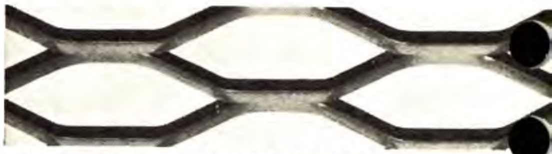
PROJECTION MESH

1.87 lb.	1.125″x5.000″	.875″x3.188″	.187″x.134″	72″x120″

Special Sheet Sizes—In addition to furnishing the standard size sheets listed in the table above, GRATE-X can be furnished shared to special sizes. Note: It is standard practice to shear GRATE-X on the first bond over the dimension specified, both SWD (Short Way of Diamond) and LWD (Long Way of Diamond).

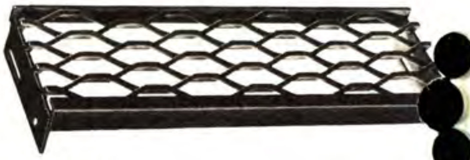
Prefabricated Grate-X Treads—GRATE-X stair treads have all the advantages of GRATE-X and are ideal for fire excapes and all types of industrial and ship stairways. The treads are completely prefabricated by U. S. G. and shipped to the customer ready for installation. The stair treads are easily installed by a simple attachment with bolts and nuts to standard steel channel stringers. Bolts and nuts for attachment are not furnished with the treads.

Tread lengths are available from 16 in. to 48 in. inclusive, in ½ in. increments. For complete information on GRATE-X and GRATE-X stair treads, see our catalog in A.I.A. File 14-A-1.



4 lb. GRATE-X approximately ⅓ actual size.

GRATE-X permits maximum passage of air and light.



GRATE-X stair tread

USG SAFETY WALK GRATING

USG Safety Walk Grating is roll-formed from galvanized steel into interlocking panels with three continuous 1⅝″ deep ribs. Its light weight provides low initial cost of grating and framing.

USG Safety Walk Grating is usable for both interior or exterior walkways or platforms. Weep holes are provided in the base of each rib for drainage. Projections on the top surface resist possible slip or skid.

1″ minimum bearing is recommended in simple span construction.

For further detail, consult your nearest USG Sales Office.

Specifications:

• Metal: 18-gauge galvanized steel • Open area: 50% • Rib depth: 1⅝″ • Weight: 308 lbs. per 100 sq. ft. • Standard Width: 18″ • Standard Length: 120″

USES:

catwalks
flooring
open pit covering
work platforms
walkways
maintenance stands
storeroom grating
scaffolding

80 ft. above ground —USG Safety Walk Grating provides extra protection for workmen.

UNITED STATES GYPSUM—The Greatest Name in Building

GENERAL OFFICES • 101 SOUTH WACKER DRIVE • CHICAGO 6, ILLINOIS

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WASHINGTON, D.C.
(ARLINGTON, VA.)

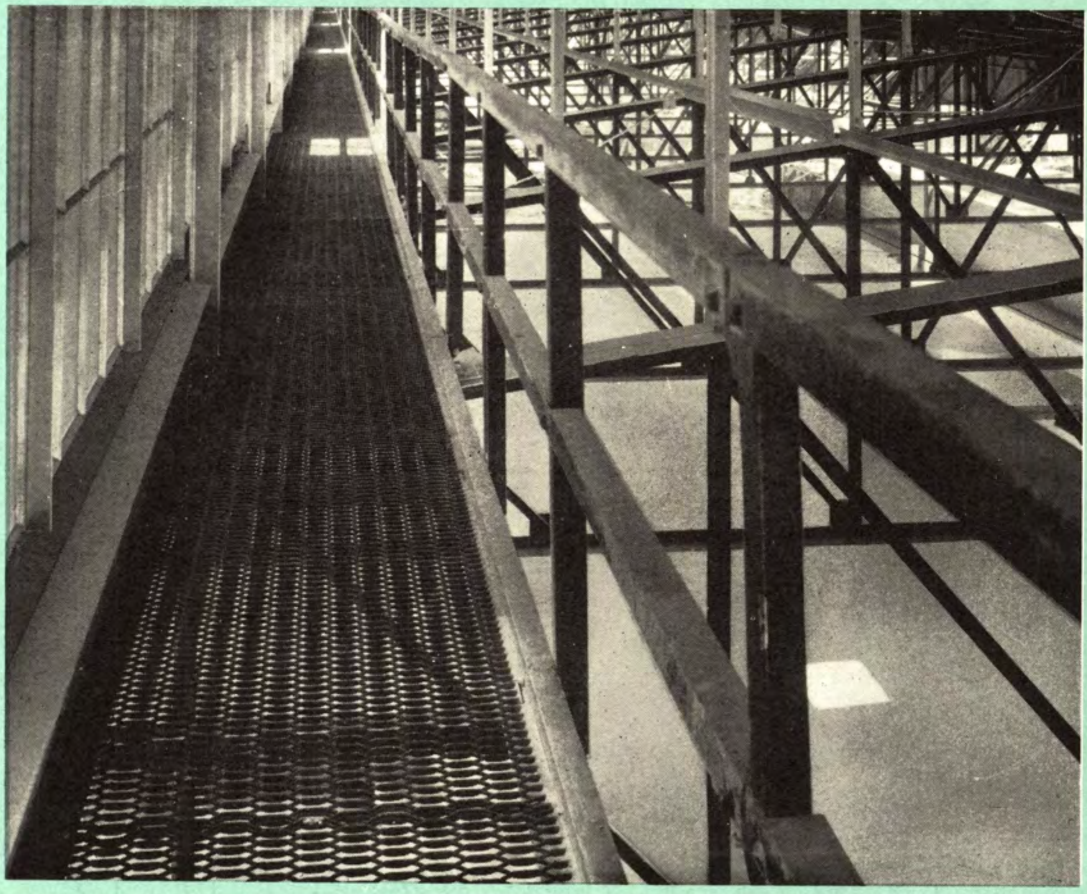
• STOCKS AVAILABLE FROM WAREHOUSES IN PRINCIPAL CITIES

A.I.A. File 14-A-1

TECHNICAL INFORMATION

USG* GRATINGS

GRATE-X* EXPANDED METAL GRATING
SAFETY WALK GRATING



UNITED STATES GYPSUM

1964

*T.M. Reg. U.S. Pat. Off.

UNITED STATES GYPSUM

A.I.A File 14-A-1

GRATE-X*
EXPANDED METAL GRATING

Description

GRATE-X is a heavy duty type expanded metal, made of steel plate which is slit and expanded in a cold-drawing operation. Designed especially for use as a lightweight open steel flooring. GRATE-X is ideal for flooring, cat walks, platforms, stair treads, etc., where its principal use is for light storage and foot traffic. Many other practical uses are possible.

U.S.G. Grate-X is also made from ¼″ aluminum plate for uses where the inherent properties of aluminum are required in addition to the advantages of Grate-X.

Function and Utility

Economical: Its low cost and light weight, combined with high strength, make for a most economical construction. A wide selection of sizes and weights is available.

High Strength: Formed like a truss, every interconnected strand acts as a structural member distributing the load in many directions, over a considerable area. There are no riveted or welded joints.

Easily Installed: The uniform pattern; ease of cutting with torch, bolt cutters or hacksaw; ease of anchorage with spot welding or bolting and ease of shaping to curved surfaces make for quick, easy installation. Holes may be cut or patched, and alterations made at will. Ease of fabrication permits stocking at user's plant for use as needed for alterations, additions, etc.

Extra Safety: The angular ridged surface formed by the multiple junctions of strands provides excellent anti-slip qualities. The closely-spaced long bond feature of GRATE-X provides greater contact area, resulting in a high traction surface, highly skid-proof yet smooth enough for wheel traffic. Snow and ice break off easily under foot, water and oil drain off readily; thus maintaining anti-slip qualities under adverse conditions.

Large Open Area: The angular position of the strands and bonds permits ready passage of light and air. Dust cannot accumulate. The percentage of open area is actually as great at an entrance angle of 45 degrees as at 90 degrees.

Easily Maintained: The angular position of strands and bonds and large open area make GRATE-X virtually self-cleaning. All surfaces can be readily reached for painting with brush or spray gun.

For further details, consult the nearest USG sales office.

GRATE-X allows ready passage of air and light

Specifications

SCOPE: GRATE-X (U. S. G. Expanded Metal Grating), shall be installed for all walkways and other areas where shown on drawings.

Material: GRATE-X shall weigh (specify weight per square foot from Table 2).

(For steel) The steel used in its manufacture shall comply with ASTM designation A-283-58T.

(For aluminum) The aluminum in its manufacture shall be 5052 H-32 alloy of aluminum.

ERECTION: Units of GRATE-X shall be installed with straight edge of bond up. GRATE-X shall be so placed that the direction of the long way of the diamond parallels the direction of the span. Attachment to framing shall be by welding at 6″ intervals. Edges parallel to long way of diamonds shall be butted and welded on every second bond. Individual pieces of GRATE-X shall be placed in such a manner that the diamonds of one piece are aligned with those of adjacent pieces.

"USG", "GRATE-X" and "EXPAND-X" are registered trademarks owned by United States Gypsum and identify the particular types of expanded metal or grating manufactured only by United States Gypsum.

GRATE-X* STAIR TREADS

GRATE-X stair treads have all the advantages of GRATE-X and are ideal for fire escapes and all types of industrial and ship stairways. The treads are completely prefabricated by U.S.G. and shipped to the customer ready for installation. The stair treads are easily installed by a simple attachment with bolts and nuts to standard steel channel stringers. Bolts and nuts for attachment are not furnished with the treads.

Tread lengths are available from 16 in. to 48 in. inclusive, in ½ in. increments. Standard widths are listed in table on page 3.

*T.M. Reg. U. S. Pat. Off.

• Since methods and conditions of application and use are beyond our control, the United States Gypsum Company will not be responsible for failure of its products when not used according to directions and specifications.

TECHNICAL DATA Load Test Data with Deflections in Inches

Table 1

LOADING CONDITION—Concentrated load in lbs. per 12″ of width applied at center of span. Deflections given in inches at center of span are based on tests. Ends of grating rigidly fastened about 6″ on centers.

Carbon Steel (3, 4, 5 and 7 lb.) Grate-X. Data from tests by Armour Research Foundation: 6.25 lb. Data from USG Research.

LOAD	DEFLECTION IN INCHES . . . CARBON STEEL GRATE-X																			
CONCENTRATED LOAD AT CENTER LINE — POUNDS PER 12″ WIDTHS	25″ CLEAR SPAN					30″ CLEAR SPAN					35″ CLEAR SPAN					40″ CLEAR SPAN				
	TYPE OF GRATING					TYPE OF GRATING					TYPE OF GRATING					TYPE OF GRATING				
	3.0 lb.	4.0 lb.	5.0 lb.	6.25 lb.	7.0 lb.	3.0 lb.	4.0 lb.	5.0 lb.	6.25 lb.	7.0 lb.	3.0 lb.	4.0 lb.	5.0 lb.	6.25 lb.	7.0 lb.	4.0 lb.	5.0 lb.	6.25 lb.	7.0 lb.	
50	.060	.040	.037	.020	.011	.086	.061	.048	.030	.031	.147	.088	.068	.043	.051	.119	.089	.055	.062	
100	.114	.082	.070	.035	.035	.169	.120	.093	.058	.062		.174	.138	.082	.089	.241	.177	.107	.111	
150		.119	.102	.054	.062		.177	.140	.083	.093			.204	.120	.123		.260	.157	.159	
200			.134	.072	.079			.181	.120	.117				.157	.155			.212	.205	

Carbon Steel (3.14 and 4.27 lb.) and Aluminum (2.0 lb.) Grate-X. Data from USG Research.

LOAD	DEFLECTION IN INCHES CARBON STEEL (3.14 AND 4.27 lb.) GRATE-X								DEFLECTION IN INCHES ALUMINUM (2.0 lb.) GRATE-X	
CONCENTRATED LOAD AT CENTER LINE — POUNDS PER 12″ WIDTHS	23″ CLEAR SPAN		29″ CLEAR SPAN		35″ CLEAR SPAN		41″ CLEAR SPAN		CLEAR SPAN	
	TYPE OF GRATING		TYPE OF GRATING		TYPE OF GRATING		TYPE OF GRATING			
	3.14 lb.	4.27 lb.	3.14 lb.	4.27 lb.	3.14 lb.	4.27 lb.	3.14 lb.	4.27 lb.	20″	25″
50	.037	.024	.057	.043	.086	.083	.097	.123	.076	.118
100	.070	.050	.112	.095	.174	.156	.192	.232	.153	.237
150	.105	.080		.153		.223			.229	.355
200		.111		.209					.306	

Weights (per square foot) and Dimensions (inches)

Table 2

CARBON STEEL

STYLE (psf)	DIAMOND SIZE WIDTH X LENGTH	OPENING SIZE	STRAND WIDTH	STRAND THICK-NESS	GRATE-X DEPTH	PERCENT OPEN AREA	SHEET SIZE WIDTH (SWD) LENGTH (LWD)
3.0 lb.	1.44 x 5.0	1.09 x 3.31	.23	.223	½	61%	48″ or 72″ x 60″, 96 γ, 120″ or 144″
3.14 lb.	2.000 x 6.0	1.625 x 4.875	.312	.250	9/16	69%	48″ or 72″ x 120″
4.0 lb.	1.395 x 5.0	1.02 x 3.25	.30	.223	⅝	54%	48″, 60″ or 72″ x 96″ γ 60″ x 60″ or 120″
4.27 lb.	1.412 x 4.0	1.0 x 2.88	.30	.250	⅝	58%	48″ or 72″ x 96″
5.0 lb.	1.143 x 5.0	.72 x 2.88	.31	.223	⅝	48%	48″ x 60″, 96″γ or 120″
6.25 lb.	1.412 x 5.0	.781 x 3.125	.380	.284	47/64	46%	48″ or 72″ x 96″ γ
7.0 lb.	1.333 x 5.0	.70 x 2.75	.40	.284	¾	40%	48″ x 50″ x 100″

γ—Length shown is nominal, actual length—97½″.

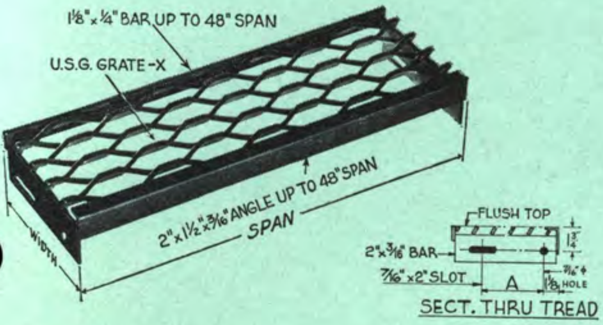
ALUMINUM

2.0 lb.	1.25 x 5.0	.73 x 2.88	.356	.250	⅝	43%	60″ x 60″ or 120″

Note: Special sizes on request. Specify sizes by giving diamonds SWD (Short way of diamond) by LWD (Long way of diamond) respectively.

#2 PROJECTION MESH

1.87 lb.	1.125 x 5.000	.88 x 3.19	.187	.134	11/16	67%	6′ x 10′



Widths Available

NO. 4A TREAD (4 LB. GRATE-X)	NO. 5A TREAD (5 LB. GRATE-X)	DIMENSION "A" FOR BOTH 4A & 5A
5¾″	6¼″	2½″
7⅛″	7⅜″	2½″
8½″	8½″	4½″
9⅞″	9¾″	6″
11¼″	10⅞″	7″

Lengths Available. Tread lengths from 16 inches to 48 inches inclusive, in ½ inch increments.

USG* GRATINGS AND EXPAND-X* EXPANDED METAL

For more information on EXPAND-X
see our catalog in Sweet's
Architectural File...... 6e/Uni
Product Design File...... 1g/Uni
or see the AIA File 15-T, 30-J

USG SAFETY WALK GRATING

USG Safety Walk Grating is roll-formed from galvanized steel into interlocking panels with three continuous 1⅝″ deep ribs. Its light weight provides low initial cost of grating and framing.

USG Safety Walk Grating is usable for both interior or exterior walkways or platforms. Weep holes are provided in the base of each rib for drainage. Projections on the top surface resist possible slip or skid.

1″ minimum bearing is recommended in simple span construction.

For further detail, consult your nearest USG Sales Office.

Specifications:

• Metal: 18-gauge galvanized steel • Open area: 50% • Rib depth: 1⅝″ • Weight: 308 lbs. per 100 sq. ft. • Standard Width: 18″ • Standard Length: 120″

Loading Safety The Values in this Safe Load Table are based on a 12″ wide Grating

Span	2′0″	2′6″	3′0″	3′6″	4′0″	4′6″	5′0″	5′6″	6′0″	8′0″
C	426	393	374	352	334	317	294	214	134	124
D	.067	.083	.100	.126	.204	.215	.248	.233	.194	.400
U	275	206	155	137	126	102	82	63	55	24
D	.042	.051	.072	.113	.164	.168	.250	.272	.300	.400

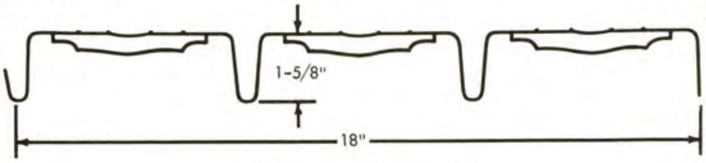
C—Concentrated Load Lb. per 12″ width.
U—Uniform Load Lb. per Sq. Ft.
D—Deflection.

NOTES: 1. Safe load based on test—⅔ proportional limit or L/240—whichever is less.
2. Tests conducted on hot dipped galvanized steel deck 0.050″ thick.

USES:

- catwalks
- flooring
- open pit covering
- work platforms
- walkways
- maintenance stands
- storeroom grating
- scaffolding

80 ft. above ground—USG Safety Walk Grating provides extra protection for workmen.



TYPICAL CROSS SECTION

EXPAND-X* EXPANDED METALS

EXPAND-X and Flattened EXPAND-X are open mesh Expanded Metal units made from sheets of steel or certain other metals which have been slit and expanded in a single cold-drawn operation. See data below for sizes. In addition to our Standard EXPAND-X series, inquiries are invited on our Decorative Expanded Metal series.

Many uses. Particularly suitable for partitions, ventilator grills, window guards, shelving, radiator enclosures, bins, racks, etc.

Open mesh. The large percentage of open area permits passage of air and light.

Strong and rigid. There are no rivets or welded joints except where units are joined. Strands of expanded metal are set at a sharp angle, improving strength and rigidity. Various weights are available to meet varying conditions.

Smooth surface. The surface of Flattened EXPAND-X expanded metal permits its use for shelving on which objects can more easily stand without tipping and slide without catching.

Workable. These products can be readily cut into desired shapes without danger of raveled strands, and may be welded, bent and formed, drawn and flared.

Neat appearance. Pattern is well formed and regularly spaced.

Accessories. Edgings, framings and various other accessories are available.

Metals. Open hearth steel, stainless steel and aluminum are stocked. Copper, brass, etc., can be furnished made to order.

Design service. United States Gypsum Industrial Sales Department is equipped to assist in working out specific problems and to recommend attachment devices and methods.

EXPAND-X

Flattened EXPAND-X

*T. M. Reg. U.S. Pat. Off.

UNITED STATES GYPSUM—The Greatest Name in Building

GENERAL OFFICES • 101 SOUTH WACKER DRIVE • CHICAGO 6, ILLINOIS

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SAN ANTONIO, TEX.
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SEATTLE, WASH.
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TAMPA, FLA.
WASHINGTON, D.C.
(ARLINGTON, VA.)

TECHNICAL INFORMATION

TEXOLITE*

PAINT PRODUCTS

UNITED STATES GYPSUM

1962

*T.M. Reg. U.S. Pat. Off.

TEXOLITE*

PAINT PRODUCTS

USG* PRODUCTS		Characteristics	See Page	EXTERIOR USE		
				Porous Masonry Walls & Soffits	Above Grade Masonry	Wood & Asbestos Shakes & Shingles
Surface Preparations and Joint Treatment Products						
SHEETROCK* Sealer		For use under enamels, other interior spirit-thinned and water-thinned emulsion paints	5			
TEXOLITE Primer-Sealer		Quick drying, "locks in" lime or alkali, outstanding performance under water thinned paints. Also under interior oil paints.	5			
TEXOLITE Exterior House Primer		Blister-resistant, breather type oil house primer	5			X
TEXOLITE Penetrating Sealer		Specially formulated for porous or chalky surfaces.	5	X	X	
TEXOLITE Block Filler		Conceals voids, fills pores & will correct or improve surface blemishes.	5	X	X	
TEXOLITE Drywall Surfacer		Aggregated coating for sand-finish effect.	6			
DURA-STOP*		Forms durable, water-tight fill; resists hydrostatic pressure.	5	X	X	
PERF-A-TAPE* Joint System		Reinforces, conceals gypsum wallboard joints, nailheads.	6			
PERF-A-TAPE Joint Compound and Topping		" " " " " "	6			
Ready-mixed PERF-A-TAPE Joint Compound		" " " " " "	6			
RED TOP* Patching Plaster		For easy, permanent, low-cost patching or repair.	6			
TEXOLITE Spackling Putty		General purpose fine filling, patching, building up.	6			
TEXOLITE Paste Spackling Putty		All-purpose putty for patching, leveling most interior surfaces.	6			
Finishes	**Types**					
TEXOLITE Alkyd Latex	flat	Quick drying, recoatable, no painty odor.	6			
TEXOLITE* GRAND PRIZE*	velvet	Quick drying, washable, excellent covering.	7			
TEXOLITE Standard	flat	Cleanable water-thinned casein for interiors.	7			
TEXOLITE Latex House Paint	flat	Breather-type; alkali, weather, fade and chalk-resistant	7	X	X	X
TEXOLITE Vinyl Exterior	flat	Good weathering, non-penetrating emulsified polyvinyl base.	6	X		X
TEXOLITE DURA-DRI*	flat	Heavy bodied water protective coating.	7	X	X	
TEXOLITE CEMENTICO*	flat	Water repellent hydraulic cement base.	7	X	X	
TEXOLITE Floor Paint	medium gloss	Quick drying, recoatable latex floor paint for interior and exterior use.	7			
USG* Simulated Acoustical Spray Finish	textured	Provides acoustical appearance	6			
TEXOLITE Semi-Gloss Enamel	semi-gloss	Spirit-thinned, odorless alkyd base enamel.	8			
TEXOLITE Oil Paints	various	Solvent thinned oil paints	8	X	X	X
Super NEO-FLECK® multi-color enamel	flat	Tough, thick-filmed multicolored interior enamel.	7			
TEXOLITE Texture	sanded	Odorless, one-coat, rubberized.	8			
TEXOLITE Ripple	stipple	Latex base, ready to use interior finish.	8			
USG Spray Texture	texture	Excellent hardness, good under-surface concealment	8			
TEXTONE*	textured	Plastic texturing, blemish concealing, for interiors.	8			
USG* Texture Paint	textured	Economical plastic texturing paint.	8			
A-B TEX*	textured	Economical paint for light-medium textures, concrete ceilings.	8			

ARCHITECTURAL SPECIFICATIONS . . . . 3 & 4

"USG", "TEXOLITE", "DURAVAL", "GRAND PRIZE", "TEXTONE", "CEMENTICO", "A-B TEX", "DUR-A-DRI", "DURA-STOP", "SHEETROCK", "RED TOP", "PERF-A-TAPE", are trademarks owned and/or registered by United States Gypsum and are used by it to distinguish the particular paints and painters' supply products manufactured only by United States Gypsum Company.

TEXOLITE
PAINT PRODUCTS

PATIO'S FLOOR	INTERIOR USE								
Concrete, Asphalt, Primed-Wood, Int./Ext.	Plaster Walls & Ceilings	Gypsum Wallboard Walls & Ceilings	Wood Except Floors	Metal	Perforated Acoustical Tiles	Plaster, Fissured & Textured Acoustical Tile	Composition Wallboards & Hardboard	Porous Masonry Walls & Ceilings	Above & Below Grade Masonry
Surface Preparations and Joint Treatment Products									
	X	X					X		
	X	X					X	X	
X								X	
								X	
	X	X						X	
								X	X
		X							
		X							
		X							
	X							X	
	X[1]	X	X	X				X	
	X	X	X	X				X	
Finishes									
	X	X			X		X	X	
	X	X			X		X	X	
	X	X			X	X	X	X	
								X	
								X	
								X	X
								X	X
X									
	X	X						X	
	X	X	X	X			X	X	
	X		X	X			X	X	
	X	X			X		X	X	
	X	X							
	X	X							
	X	X					X	X	
	X	X					X	X	
	X	X					X		
	X	X						X	

Federal Specification Paints on Request

[1] Also Canvas

*T.M. Reg. U.S. Pat. Off.

TECHNICAL ASSISTANCE

Keeping pace with the development of product, U.S.G. has maintained and expanded its services to the building industry. Offices in all major cities, staffed with trained paint personnel are prepared to provide information and assistance without obligation. Supplementing these representatives, the U.S.G. Architect Service Department is available to assist the architect and engineer.

SPECIFICATIONS

I. GENERAL CONDITIONS

The painting contractor shall read and be governed by the general conditions at the head of the complete specifications for this project.

II. MATERIALS

1. Deliver in original unopened containers.
2. Store to protect from damage by elements and tampering.
3. Use all materials in strict accordance with manufacturer's directions as furnished at time of material delivery.

III. MASTER SPECIFICATIONS

A. INTERIOR WORK

All surfaces must be dry, sound, clean, free of dust, grease or oil.

1. **PLASTER**—Fill all nicks, cracks, gouges, and other surface imperfections with Texolite Paste or Powder Spackling Putty. Use Red Top Patching Plaster to repair large holes and cracks in plaster. Large cracks may be reinforced with Perf-A-Tape Joint System. Repaired surfaces shall be sanded smooth and dust removed, or textured to match adjoining surface.

NEW PLASTER*—including any patches and repairs, must age 60 days.*

Flat Finish—*Alkyd-Latex, or Casein Paints*

(a) Pastels—2 coats of Texolite Grand Prize or Texolite Alkyd Latex Paint or 1 coat Texolite Primer Sealer tinted to approximate shade of finish coat and 1 or 2 coats Texolite Alkyd Latex or 1 or 2 coats Texolite Standard or 1 or 2 coats Texolite Flat Oil Paint.

(b) Deep Tones—1 or 2 coats Texolite Primer Sealer tinted to approximate shade of finish coat and 1 or 2 coats Texolite Flat Wall Paint or 1 or 2 coats of Texolite Alkyd Latex Paint.

Velvet Finish—*Rubber Emulsion Base Paint*—1 coat of Texolite Primer Sealer tinted to the approximate shade of the finish coat. 1 or 2 coats of Texolite Grand Prize.

Semi-Gloss Finish—1 coat of Texolite Primer Sealer and 1 or 2 coats of Texolite Semi-Gloss Enamel.

High Gloss Finish—1 coat of Texolite Primer-Sealer, or 1 coat Texolite Enamel Undercoater, (tinted to approximate shade of finish coat) and 1 or 2 coats of Texolite Gloss Enamel.

Multi-Color Finish—1 double spray application of Super Neo Fleck Enamel.

Acoustical Appearance on Ceiling—1 spray coat USG Simulated Acoustical Spray Finish.

OLD PLASTER PREVIOUSLY PAINTED *—Remove all loose or scaling paint and repair as outlined under the Plaster section.*

Flat Finish

(a) Pastels—1 or 2 coats of Texolite Alkyd Latex Paint or 1 or 2 coats of Texolite Standard Paint.

(b) Deep Tones—1 or 2 coats of Texolite Alkyd Latex or 1 or 2 coats of Texolite Primer Sealer tinted to the approximate shade of finish coat and 1 or 2 coats of flat oil paint.

Velvet Finish—*Rubber Emulsion Base Paint*—1 or 2 coats of Texolite Grand Prize.

SEMI-GLOSS FINISH—1 or 2 coats of Texolite Semi-Gloss Enamel.

High Gloss Finish—1 coat of Texolite Enamel Undercoat and 1 or 2 coats of Texolite Gloss Enamel.

MULTI-COLOR FINISH—1 double spray application of Super Neo Fleck Enamel.

Acoustical Appearance on Ceiling—1 spray coat USG Simulated Acoustical Spray Finish.

2. **GYPSUM WALLBOARD**—Prepare joints and nailheads with Perf-A-Tape* Joint System in accordance with manufacturer's directions.

Flat Finish—1 or 2 coats of Texolite* Alkyd Latex or 1 coat Sheetrock* Sealer or Texolite Primer-Sealer tinted to approximate shade of finish coat and 1 coat Texolite Standard or Texolite Flat Wall Paint.

Velvet Finish—*Rubber Emulsion Base Paint*—1 or 2 coats of Texolite Grand Prize or 1 coat Sheetrock Sealer or Texolite Primer-Sealer tinted to approximate shade of finish coat and 1 or 2 coats Texolite Grand Prize* paint.

Multi-Color Finish—1 double spray application of Super Neo Fleck Enamel.

Semi-Gloss Finish—1 coat of Sheetrock Sealer or Texolite Primer-Sealer tinted to approximate shade of finish coat and 1 or 2 coats of Texolite Semi-Gloss Enamel.

High Gloss Finish—1 coat Sheetrock Sealer, or Texolite Primer-Sealer, or 1 coat Texolite Enamel Undercoater (tinted to approximate shade of finish coat) and 1 or 2 coats of Texolite Gloss Enamel.

Textured Finish—1 coat Textone* of consistency to provide desired texture or 1 coat USG* Texture Paint of consistency to provide desired texture and 1 or 2 coats Texolite Grand Prize or Texolite Alkyd Latex or 1 or 2 coats of Texolite Standard.

Sand Finish Texture—1 coat of Texolite Texture, or Texolite Drywall Surfacer.

Stipple Finish—1 coat of Texolite Ripple, or 1 coat USG Spray Texture, or 1 coat Sheetrock Sealer or Texolite Primer-Sealer tinted to approximate shade of finish coat and 1 coat of oil stipple paint.

Wallpaper or Wall Fabric Coverings—1 coat Sheetrock Sealer. Apply wallpaper or wall covering in accordance with the manufacturer's directions. A size over Sheetrock* Sealer is recommended.

3. **WOOD SURFACE (except floors)**—New wood (not previously painted); sand smooth, touch up knots, sap streaks, pitch spots with shellac. 1 coat pigmented oil primer sealer and 1 or 2 coats Texolite Grand Prize for velvet finish or 1 or 2 coats Texolite Semi-Gloss Enamel for semi-gloss finish.

4. **METAL**—Remove grease, oil and plaster spatterings. 1 coat of rust inhibitive primer and 1 or 2 coats Texolite Grand Prize or 1 or 2 coats Texolite Alkyd Latex or 1 or 2 coats Texolite Semi-Gloss Enamel.

5. **ACOUSTICAL TILES (perforated and heavily fissured)**—1 or 2 coats Texolite Standard, Grand Prize, or Texolite Alkyd Latex.

6. **ACOUSTICAL PLASTER AND LIGHTLY FISSURED TILE** (refer to painting instructions of plaster or tile manufacturer). 1 coat of Texolite Standard reduced in the proportion of 1 gallon paste paint to 1 gallon of water and 1 coat of Texolite Standard reduced in the proportion of 1 gallon paste paint to 2 gallons of water.

7. **INSULATION BOARD (hardboard and other composition wall boards).** —1 or 2 coats of Texolite Standard, Texolite Grand Prize, or Texolite Alkyd Latex.

8. **Acoustical Appearance On Ceiling**—1 spray coat USG Simulated Acoustical Spray Finish.

9. **MASONRY**—Surfaces such as concrete block, brick, stucco, monolithic concrete and unglazed tile. All surfaces must be dry, sound, clean, free of dust, grease, oil, efflorescence and chalkiness. For light or moderately chalky surfaces 1 coat Texolite Penetrating Sealer will penetrate the chalk and bind it to original surface to form a tight base for repainting. A coat of Texolite Block Filler will conceal voids, pores, correct or improve surface blemishes and provide a uniform sanded surface for painting. Texolite Penetrating Sealer and Texolite Block Filler can be used under any paint except cement base paints. Atmospheric and structural temperatures must be above 50°F during application and for 48 hours afterward.

Multi-Color Finish—1 double spray application of Super Neo Fleck® Enamel.

Washable Velvet Finish—1 coat Texolite Primer-Sealer tinted to approximate shade of finish coat and 1 or 2 coats Texolite Grand Prize.

Flat Finish—1 coat Texolite Primer-Sealer tinted to approximate shade of finish coat and 1 or 2 coats Texolite Grand Prize; or 1 or 2 coats Texolite Standard or Texolite Alkyd Latex, or 1 or 2 coats Texolite Vinyl Exterior Paint or Texolite Latex House Paint.

Uniform Sanded Finish—1 coat Texolite Block Filler and 1 or 2 coats Texolite Vinyl Exterior or Texolite Grand Prize. 1 or 2 coats Texolite Alkyd Latex or Texolite Standard or 1 double spray application of Super Neo Fleck Enamel.

Control Water Penetration—Use Dura-Stop to stop the flow of water through cracks or holes, then apply Dura-Dri to the dampened porous masonry surface. Keep surface moist for about 12 hours for complete curing of the Dura-Dri.

Portland Cement Base Finish—2 coats Cementico.

B. EXTERIOR WORK

Masonry Surfaces—Porous, Unvibrated.

All surfaces must be porous, free from oil, grease, efflorescence, chalkiness. Patch cracks or openings with Dura-Dri*, Dura-Stop* or 1 part Texolite Cementico* mixed with 2 parts clean sharp sand. Texture to duplicate original surface. Remove any rust stains.

1. **PORTLAND CEMENT BASE PAINT FINISH**—Apply on such unpainted, porous masonry surfaces as brick, concrete masonry units, unglazed tile, stucco, etc., or similar weathered surfaces painted only with portland cement base paints.

Prepare surfaces and apply coatings in strict compliance with manufacturers directions. Be sure atmospheric and structural temperatures during and for 48 hours after application are above 50° F.

2 coats Cementico, or 1 coat Dura-Dri and 1 coat Cementico, or 1 coat Dura-Dri (or Cementico) and 1 or 2 coats Texolite Vinyl Exterior Paint in specified color.

2. **MASONRY SURFACES**—Painted or unpainted.
Surface treatment—remove heavy chalking by sand-blasting or other means—then apply 1 coat Texolite Penetrating Sealer. When dry, 1 or 2 coats Texolite Vinyl Exterior Paint or Texolite Latex House Paint in specified color.

Surfaces with light to moderate chalking—1 coat Texolite Penetrating Sealer, followed, when dry, with 1 (or 2) coats Texolite Vinyl Exterior Paint or Texolite Latex House Paint in specified color.

Sound surfaces in paintable condition—1 (or 2) coats Texolite Vinyl Exterior Paint or Texolite Latex House Paint in specified color.

3. **WOOD SURFACES** (Clapboard, shakes, shingles, etc.)—New or unpainted.

After surface preparation as specified in manufacturers directions, 1 or 2 coats Texolite Exterior House Primer—894 White, then 2 coats Texolite Latex House Paint in specified color, or 1 or 2 coats Texolite Exterior House Primer—894 White, followed by 1 or 2 coats Texolite Exterior Gloss House Paint in specified color.

4. **WOOD SURFACES**—painted.

Before painting prepare surfaces as required in product directions. Prime or seal as required in product directions. Then apply 1 or 2 coats Texolite Exterior Gloss House Paint in specified color, or 1 coat Texolite Exterior House Primer—894 White, followed by 2 coats Texolite Latex House Paint in specified color.

*T.M. Reg. U.S. Pat. Off.

PRODUCT DESCRIPTION

SURFACE PREPARATIONS

SHEETROCK* SEALER

A tung oil emulsion sealer designed specifically for application over gypsum wallboard. Unsurpassed in filling and bridging hairline cracks in plaster.

FORM

Ready to use.

CHARACTERISTICS

Ready to use. Ease of application. May be tinted with Grand Prize*.

PRIMING

Not required.

USES & LIMITATIONS

For use over gypsum wallboard to seal Perf-a-Tape Joints, lay the nap of the paper, and prepare the surface to receive oil stipples, enamels, flat oil paints, water thinned paints and latex paints, and/as a size under wallpaper.

TEXOLITE PRIMER-SEALER

A pigmented, easily applied, quick drying primer-sealer which "locks in" lime or alkali, equalizes "suction," provides "tooth." For use on all interior wall and ceiling surfaces. Provides more outstanding performance under water-thinned paints than any other sealers. Excellent under paints thinned with turpentine or mineral spirits, too.

FORM

Ready to use.

CHARACTERISTICS

Thoroughly seals, dries to uniform sheen, lime locking eliminates suction problems, bridges hairline cracks, lays fiber nap in gypsum or insulating types of wallboard. When drying conditions are good, may be recoated with oil, alkyd oleoresinous paints and enamels in two hours or more. Water thinned paints may be applied when sealer has dried overnight or longer, depending on drying conditions.

PRIMING

Not required.

USES & LIMITATIONS

Use on all dry, sound, clean, paintable, new or old, painted or unpainted interior surfaces. Prime metal surfaces with rust inhibitive primer. May be tinted. Apply with brush, roller or spray. Not for use on floors.

TEXOLITE EXTERIOR HOUSE PRIMER
No. 894 WHITE

Oil base primer for use on painted and unpainted wood surfaces. Primarily for use as base coat for Texolite Latex House Paint.

FORM

Ready to use.

CHARACTERISTICS

Blister-resistant, breather-type coating especially recommended before application of Texolite Latex House Paint. Excellent performance under oil paints, too. Formulated to be of TTP-25A type, but is lead free. Good mildew and mold resistance and considered fume proof.

PRIMING

Not required.

USES & LIMITATIONS

Use on wood surfaces, new or previously painted, that are clean, dry, sound, free of dust, cobwebs, grease and other foreign matter. Apply when temperatures are above 50° F. When thoroughly dry, apply finish coat. Previously painted wood surfaces with slight to moderate chalk may be painted directly. Heavy chalk should be removed.

TEXOLITE PENETRATING SEALER

A special sealer formulated to penetrate and condition exterior and interior wall and ceiling surfaces which are porous and/or moderately chalky.

FORM

Ready to use.

CHARACTERISTICS

Will penetrate the chalk remaining from cement, resin emulsion or oil type paints on otherwise firm surfaces. Binds the chalk to the original surface, forming a tight base for repainting. May be recoated with any type paint, except bonding cement paints.

PRIMING

Not required.

USES & LIMITATIONS

Use on porous surfaces which are free from heavy chalk, grease, oil, wax, and other foreign materials. Surface must be cleared of peeling, flaking and crumbling conditions and must be thoroughly dry. May be tinted with colors in oil. Other colorants not recommended. Allow sealer to dry at least four days before covering with finish coatsof paint.

TEXOLITE BLOCK FILLER

An all purpose, ready to use filler for concealing voids, filling pores and presenting a uniform sand effect over all interior and exterior masonry surfaces, or other rough wall and ceiling surfaces.

FORM

Ready to use.

CHARACTERISTICS

Conceals voids, fills pores, corrects or improves surface blemishes, provides a uniform sand effect. On block walls, reduces sound transmission from one room to another. Average sound transmission loss of .42 when material is applied to both sides of 4 inch Waylite Block wall. May be coated with any type paint, except bonding cement paints. On exterior, coat with Texolite Vinyl Exterior Paint or other good grade exterior paint.

PRIMING

On surfaces which are porous and moderately chalky first apply coat of Texolite Penetrating Sealer. On other surfaces which are clean, sound, and free of foreign materials, no priming is necessary.

USES & LIMITATIONS

Provides uniform finish over normally rough surfaces. Rejuvenates old masonry walls. Use on interior or exterior, painted or unpainted, dry, sound, clean, paintable, masonry surfaces. May be tinted with Texolite Vinyl Exterior Paint, if maximum filling properties are not required. Apply when atmospheric and structural temperatures are above 50°F. Not intended to be a water-proofing material. Recommended for light duty exposure conditions on exterior applications only.

DURA-STOP*

Is a dry powder hydraulic compound, requires only water for mixing. Stops water under pressure from coming through cracks, breaks or holes in porous masonry.

FORM

Powder.

CHARACTERISTICS

Sets in 3 to 5 minutes and stops water under pressure from coming through cracks, breaks and holes in porous masonry. It must be held in place until set. Becomes harder and more water resistant in the presence of water.

PRIMING

Masonry surface should be dampened thoroughly prior to application.

USES & LIMITATIONS

For filling cracks and holes in masonry prior to the application of Dura-Dri. Dura-Stop will stop the flow of water even when the water is under pressure. Dura-Stop sets in 3 to 5 minutes, may also be used to anchor washing machines, motors and other fixtures to concrete floors and walls. Do not use on non-porous masonry or non-masonry surfaces.

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*T.M. Reg. U.S. Pat. Off.

PRODUCT DESCRIPTION

SURFACE PREPARATIONS cont.

PERF-A-TAPE* JOINT SYSTEM

PERF-A-TAPE JOINT COMPOUND AND TOPPING

System consists of Joint Compound and strong spark perforated fiber tape in one package. Perf-A-Tape Joint Compound and Perf-A-Tape Topping are bedding and finishing materials respectively with the Perf-A-Tape being supplied separately. They are designed to reinforce and conceal gypsum wallboard joints and nail heads. They are excellent for repairing cracks on plaster surfaces.

FORM

Powder (compound) and reinforcement tape.

CHARACTERISTICS

Ample working time, excellent bond, easy mixing, minimum shrinkage, smooth working, easy sanding, no alkali burning of paint. Product designed for use in hand taping or for application with special taping tools.

PRIMING

None required—both can be coated with most standard priming materials.

USES & LIMITATIONS

Used in both new and old construction for concealing and reinforcing joints and nail heads in gypsum wallboard or for reinforcing cracks, interior and exterior angles in most types of interior wall and ceiling surfaces. Not for exterior use.

READY-MIXED PERF-A-TAPE COMPOUND

A ready to use compound for concealing and reinforcing joints between panels of gypsum wallboard. This single, ready mixed product provides strong bond and extreme smoothness of finished joint. Available in either Mechanical or Hand application consistency.

CHARACTERISTICS

Smooth, strong easy working and requires minimum of sanding. Remarkable resistance to edge cracking. Assures uniform cement mixture throughout job and eliminates contamination resulting from dirty water.

FORM

Ready to use. Obtainable in either 1 or 5 gallon containers.

PRIMING

None required—can be coated with most standard priming materials.

USES

A specialized material for finer dry wall work. Excellent for repairing cracks in plaster and interior masonry not subject to moisture. On-the-wall cost same as powder compound. Compound works equally well with machine or hand tools. Containers should be protected from freezing.

TEXOLITE DRYWALL SURFACER

An aggregated coating providing a sand finish effect on interior walls and ceilings. Especially useful over drywall surfaces. Natural white color only.

FORM

Powder.

CHARACTERISTICS

Provides hard, uniform, attractive appearance. Spray applied only. Very economical. Usually painted after drying.

PRIMING

Not required.

USES & LIMITATIONS

For treating walls and ceilings in, houses, apartments, stores, offices motels and similar buildings. For interior use only. Surfaces must be dry, sound and clean. Apply when temperatures are 50° F. or more.

USG* SIMULATED ACOUSTICAL SPRAY FINISH

An aggregated coating providing an acoustical finish appearance. Natural white only.

FORM

Powder.

CHARACTERISTICS

Provides interesting, intriguing finish appearance with excellent hide and firmness. Economical, too.

PRIMING

Provides best results but often not needed.

USES & LIMITATIONS

Spray applied on interior ceilings and upper wall surfaces. Use over Gypsum wallboard, plaster and concrete. No acoustical correction is claimed. Helps conceal or diminish minor defects in sub-surface. May be second coated for heavier texture appearance. May be painted, after drying, with roller or spray.

RED TOP* PATCHING PLASTER

For easy and permanent patching or repairs on interior plaster walls and ceilings and interior concrete surfaces, at a very nominal cost.

FORM

Powder.

CHARACTERISTICS

Is non-shrinking, contains no lime, has ample working life of about 30 minutes and dries to a hard, dense uniform finish. Add only water in mixing. May be covered with any decorative material.

PRIMING

Takes any standard priming material.

USES & LIMITATIONS

For patching cracks and larger surface imperfections on interior plaster and concrete surfaces. Not recommended for concrete floors. Excellent for preparing old, defaced plaster surfaces for any type of interior decoration.

TEXOLITE SPACKLING PUTTY

Used to prepare surfaces before painting or decorating to build up or fill imperfections to provide a smooth even surface.

FORM

Powder.

CHARACTERISTICS

Exceptionally fine grind—grit free—adaptable to knife or brush application. Can be sanded. Adheres to any properly cleaned solid surface. Hardens in a few hours, forming a tough, durable surface.

PRIMING

Not required.

USES & LIMITATIONS

Used to fill small cracks, scars, slight imperfections in plaster, nicks, cracks, knotholes or nail holes in wood trim, nail holes in wallboards. To fill voids or imperfections in concrete, cracks in tile or mosaic, household repairs on furniture, toys, moulding, etc. For treating canvas and wall fabric. For interior use only.

TEXOLITE PASTE SPACKLING PUTTY

An economical, all-purpose putty—ready to use—for patching or leveling small cracks, knicks, scars in most interior surfaces. Especially fine for hair-line cracks in wood or plaster and smoothing up dry-wall work.

FORM

Ready to use.

CHARACTERISTICS

No waste in mixing—use as required direct from can. Dries to a smooth, hard finish which sands easily but will not crumble, shrink or crack.

PRIMING

Takes any standard priming material.

USES & LIMITATIONS

For fine patching in wood, plaster, drywall and interior concrete surfaces. Use putty knife, broad knife, brush or caulking gun. The solution to small surface imperfections and for repairing furniture, toys, wall fabrics, mosaic, knotholes, etc.

INTERIOR OR EXTERIOR

TEXOLITE* VINYL EXTERIOR (poly vinyl acetate)

White and colors, fine quality, non-penetrating paint, good hiding, weathering qualities and true color.

FORM

Ready to use.

CHARACTERISTICS

Quick drying, easy to apply with brush, spray or roller. Highly weather resistant, yet permits unwanted moisture in walls to escape. Apply over dry or slightly damp (not wet) surfaces.

PRIMING

On porous and moderately chalky surfaces, first apply coat of Texolite Penetrating Sealer. On clean, sound, surfaces, free of foreign material, no priming is required.

USES & LIMITATIONS

Use on painted or unpainted masonry surfaces free of flaking, crumbling, or chalking conditions. Use on all types of interior surfaces, exterior wood shakes and shingles. Two coats are best. Intermix colors for many other tints and shades. Not for use over magnesite stucco, glazed brick or tile, polished stone, or unsealed, loose, scaly, greasy, chalking, powdery or otherwise unsound surfaces, nor as a floor paint.

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*T.M. Reg. U.S. Pat. Off.

FLAT FINISHES

TEXOLITE* STANDARD
(casein flat paint)—

White and tints—cleanable water thinned paint for interior walls and ceilings providing brighter, colorful, beautiful long-lived inexpensive decoration.

FORM
Paste.

CHARACTERISTICS
Dries in one hour. No prime or size coat required for most paint jobs. Use large brush for fast application. No objectionable painty odor. No fire hazard during application. Recoatable. Cuts painting time and costs.

PRIMING
Prime new wood and unpainted metal, including exposed nailheads. All other surfaces require only one or two coats of TEXOLITE Standard.

USES & LIMITATIONS
Over old and new interior walls and ceilings in homes, hotels, apartments, offices, stores, shops, schools, hospitals, factories and warehouses. Not recommended for use over wood trim subject to wear, or under damp conditions, or where it will be subjected to excessive abrasion.

TEXOLITE ALKYD LATEX

White and tints—provides washable film combining the easy, quick application of latex paints with the flatness of alkyd paints.

FORM
Ready to use.

CHARACTERISTICS
Quick drying and reasonable in cost—flat finish—no painty odor—recoatable.

PRIMING
Prime new wood and unpainted metal, including exposed nailheads. All other surfaces require only one or two coats of TEXOLITE Alkyd Latex.

USES & LIMITATIONS
Over old and new, painted and unpainted, interior walls and ceilings in homes, apartments, offices, stores, schools, hospitals, factories and warehouses and on residential development projects. Wide variety of colors by intermixing standard tints.

VELVET FINISH

TEXOLITE* GRAND PRIZE*
(vinyl plastic)

Flat wall paint. Available in white and tints. Provides durable, washable, velvet, smooth finish.

FORM
Ready to use.

CHARACTERISTICS
Easily applied. Will dry to the touch in one hour. No objectionable painty odor. Excellent leveling. Unaffected by alkalinity in plaster and concrete. One coat covers well. Can be second-coated same day under good drying conditions.

PRIMING
New wood and unpainted metal, including exposed nailheads, should be primed. All other surfaces usually require only one or two coats of GRAND PRIZE Paint.

USES & LIMITATIONS
Over old and new interior walls and ceilings in homes, apartments, offices, stores, schools, hospitals, factories, warehouses. Over painted and unpainted plaster, wallboard and concrete. Wide variety of colors available by intermixing colors and by tinting with TEXOLITE Colorants. Not recommended for use on floors or under highly humid conditions.

MULTI-COLOR FINISH

SUPER NEO FLECK® MULTI-COLOR ENAMEL
(Odorless)

Intriguing, permanent multi-colored finish, scrubbable, durable, abrasion resistant. Soft, muted, easy-to-live with colors. Spray application only.

FORM
Ready to use.

CHARACTERISTICS
Economical—fast application, quick drying, self-priming, high coverage, quick tenancy. No offensive odor, non-toxic, non-flammable, won't flash. Long storage life. Film thickness equal or exceeding two coats conventional paints.

PRIMING
No primer or "base" coat required over most surfaces. Prime unpainted metal, exposed nailheads, and some new wood finishes.

USES & LIMITATIONS
Over most interior, new or old surfaces in housing projects, commercial and industrial buildings; for maintenance work—quick rental unit reoccupancy. Not for floors or exteriors.

COATINGS

TEXOLITE LATEX HOUSE PAINT

Long lasting, good hiding, easy to apply, time saving, protective, flat finish house paint. White and colors.

FORM
Ready to use.

CHARACTERISTICS
Breather-type, alkali-resistant, fade resistant, mildew resistant, weather and chalk-resistant. Apply with brush, roller or spray.

PRIMING
TEXOLITE Exterior House Primer-894 White. Use on painted or unpainted wood surfaces. Frequently not needed on masonry surfaces.

USES & LIMITATIONS
For most new, old painted and unpainted wood siding, shingles and shakes, weathered cement asbestos siding, poured concrete, stucco, cement blocks.
New unpainted stucco, poured concrete, patches in masonry surfaces must age at least 30 days. Use TEXOLITE Penetrating Sealer on light to moderately chalky surfaces. Remove excessive chalk, loose or flaking materials by sand-blasting or other means. Then apply TEXOLITE Penetrating Sealer. Not a floor paint.
On new and previously painted wood siding, shingles etc., use with TEXOLITE Exterior House Primer-894 white according to label directions.

TEXOLITE DURA-DRI*
(controls water penetration)

White and tints. Heavy bodied protective coating for control of water penetration through porous masonry surfaces. Decorates and protects.

FORM
Powder.

CHARACTERISTICS
Easy, effective system for controlling water penetration through such porous masonry surfaces as brick, stucco, cement block, poured concrete and similar materials. Apply by brush or trowel.

PRIMING
Masonry surface should be thoroughly dampened immediately prior to application.

USES & LIMITATIONS
Over porous masonry surfaces above and below grade on interiors and exterior surfaces in homes, office and store buildings, schools, factories and warehouses. Not for use on floors. Additional attractive colors possible by overcoating with CEMENTICO, or TEXOLITE Vinyl Exterior.

TEXOLITE CEMENTICO*
(hydraulic cement paint)

White or tint paint for bringing new beauty, life and color to porous masonry surfaces.

FORM
Powder.

CHARACTERISTICS
Made of white portland cement and other special ingredients to produce hardness, binding qualities and workability. Only lime-proof colors are used. Durable. Water resistant. Bonds to porous masonry surfaces.

PRIMING
Masonry surface should be dampened thoroughly immediately prior to application.

USES & LIMITATIONS
Use only over unpainted porous masonry surfaces such as brick, clay tile, portland cement stucco, concrete, unpolished building stone and similar surfaces. Not recommended on magnesite stucco, wood, painted or greasy surfaces, smooth plaster, terra cotta, glazed brick and tile, vibrated or very dense concrete areas, floors, asbestos-cement shingles and similar non-porous or non-masonry materials.

FLOOR PAINT

TEXOLITE FLOOR PAINT
(Latex)

A medium gloss floor paint for interior or exterior use. White and colors.

FORM
Ready to use.

CHARACTERISTICS
Easy mixing—alkaline resistant—readily applied with brush and roller over clean sound paintable surfaces.

PRIMING
Coat any dusting or powdery concrete surfaces with TEXOLITE Penetrating Sealer. Concrete must be well cured and dry. Seal wood flooring with high quality porch and deck primer. Primer usually not required other surfaces.

USES & LIMITATIONS
For newly laid or freshly scrubbed concrete floors, patios, porches, basements, primed wood floors, breezeways, playrooms, offices, schools, factories, similar areas. Normally requires no etching, except on slick highly troweled spots or other unusual circumstances. Not recommended in auto showrooms, garages, where gasoline spillage is possible, or on surfaces continually wet or subject to long periods of dampness. Usually dries to touch in 30 minutes. Under good drying conditions may be exposed to light foot traffic in 1 to 1½ hours. Heavy traffic requires longer curing.

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*T.M. Reg. U.S. Pat. Off.

TEXOLITE
PAINT PRODUCTS

OIL PAINTS

TEXOLITE* SEMI-GLOSS ENAMEL (Interior)

In matching colors to TEXOLITE GRAND PRIZE* and TEXOLITE Alkyd Latex paints.

TEXOLITE Enamel Undercoat (Interior)

TEXOLITE MACHINE BASE PAINTS

In white and neutral bases, to be tinted with TEXOLITE Machine Colorants. More than 1156 colors obtainable.
TEXOLITE Semi-Gloss Enamel (Interior)
TEXOLITE Gloss Enamel (Interior)
TEXOLITE Flat Wall Paint (Interior)
TEXOLITE Exterior Gloss House Paint

FORM

Ready-to-use oil paints.

CHARACTERISTICS

High quality spirit or turpentine thinned oil paints.

PRIMING

As required.

USE & LIMITATIONS

For application on dry properly prepared surfaces.

TEXTURE FINISHES

USG SPRAY TEXTURE

A well balanced coating for application over gypsum drywall and plaster surfaces. Provides pleasing rounded texture effect. White only.

FORM

Powder.

CHARACTERISTICS

Easy mixing, economical texture treatment providing excellent hardness and adaptability. Provides good under-surface concealment.

PRIMING

Usually not required.

USES & LIMITATIONS

For interior use only. Generally applied by spray. Light stipple effect usually attained but can be varied somewhat with application techniques. Frequently applied in two coats with second coat splattered over dry first coat to provide intriguing results. Normally painted after drying.

TEXOLITE TEXTURE—TEXOLITE RIPPLE
(Rubberized Sand) (Latex—Unaggregated)

Latex emulsion paints. TEXOLITE Texture produces slight sand finish effect with light under-texture. TEXOLITE Ripple provides a smooth rounded stipple appearance. Both available in white and tints.

FORM

Ready to use.

CHARACTERISTICS

Dries quickly, applies quickly. Economical. Usually one coat treatment when applied by brush followed by roller, roller, or spray. No objectionable paint odor.

PRIMING

Prime new wood and unpainted metal, including exposed nailheads. All other surfaces usually require only one coat.

USES & LIMITATIONS

Over new and old, painted or unpainted, interior walls and ceilings in homes, offices, stores, shops, schools, churches and on residential development projects.

TEXTURE FINISHES

TEXTONE*
(plastic texture)

A plastic paint meeting the demand for a dependable, economical, easily applied texture medium capable of satisfying every requirement of modern decoration.

FORM

Powder.

CHARACTERISTICS

TEXTONE properly applied forms a texture surface of superior hardness. Furnished in white only. Can be tinted with TEXOLITE Standard or TEXOLITE Tube Colorants, or can be coated with most types of wall paints.

PRIMING

No primer usually required.

USES & LIMITATIONS

For producing light, modern textures as well as the heavier period designs over any dry, solid clean interior surface. For decorating work over new plaster, gypsum wallboards, and insulating wallboards. Especially useful in refinishing cracked plaster surfaces; for producing stone effects, antique effects and stencil work.

USG* TEXTURE PAINT
(plastic)

A popular paint that is easy to use. It provides a wide range of texturing possibilities and is lower in price than TEXTONE paint. Available in white.

FORM

Powder.

CHARACTERISTICS

A good working plastic paint for uses similar to those secured with TEXTONE. Somewhat less coverage per pound. Provides excellent textures. Tints can be secured by tinting with TEXOLITE Standard or TEXOLITE Tube Colorants, or can be coated with most types of wall paints.

PRIMING

No primer usually required.

USES & LIMITATIONS

For interesting textures over dry, clean, solid surfaces such as new plaster, gypsum wallboards, insulating wallboards, etc. Also on old cracked plaster surfaces.

A-B TEX*

An economical, easy working texturing paint—white only to produce the popularly desired light to medium textureds.

FORM

Powder.

CHARACTERISTICS

Easy mixing—economical—readily applied with brush or roller over clean-dry-firm interior surfaces. Also used as a spackling treatment on poured concrete ceilings.

PRIMING

No primer usually required.

USES & LIMITATIONS

For use over any clean-dry-sound interior wall or ceiling surface of plaster (new or old) gypsum wallboard and insulating wallboard. When used as spackling treatment on concrete ceilings, first grind down fins and other projections, then lightly grind balance of ceiling to remove any form oil or grease. Use a trowel for this spackling operation.

UNITED STATES GYPSUM
The Greatest Name in Building
GENERAL OFFICES—300 WEST ADAMS STREET, CHICAGO 6, ILLINOIS

A.I.A. File 23-L
37-B

TECHNICAL INFORMATION

USG® INSULATION BOARD AND HARDBOARD

UNITED STATES GYPSUM

1961

A.I.A. File 23-L
37-B

INSULATION AND HARDBOARD

STRUCTURAL INSULATION

DESCRIPTION	TYPE	Meets Federal Spec's.	U Value	Conductance		Finish	Thickness
				k	c		
Roof Insulation	Wood Fiber (Rigid)	LLL-F-321 b-Class-C		0.36	0.72 0.36 0.24 0.18 0.15 0.12	Asphalt Impregnated, Asphalt Coated or plain	½" 1" 1½" 2" 2½" 3"
Insulating Roof Deck (Regular)		Basic Mat LLL-F-321-b Class-E & D	0.18 0.15 0.10		0.24 0.18 0.12	Hilite (white)	1½" 2" 3"
Insulating Roof Deck (Vapor Seal)		Basic Mat LLL-F-321 b Class-E & D	0.15 0.10		0.18 0.12	Hilite (white)	2" 3"
Insulating Sheathing		LLL-F-321 b Class-E Com. Std.-42-49		0.36		Asphalt Coated or Asphalt Impregnated	25/32" ½" 25/32" ½"
Shingle Backer						Asphalt Impregnated or Asphalt Coated	⅜"
Insulating Bldg. Board		LLL-F-321 b Class-A		0.36		Hilite (white)	½"
DUPLEX* Wallboard				0.36		Hilite (white)	⅜"

DECORATIVE INSULATION

DESCRIPTION	Meet's Federal Spec's.	Thickness	Size		Approx. Wt. lbs. per M Sq. Ft.	Finish			
			Width	Length		Bone White	White	Hi-Lite	BLENDTEX*
QUIETONE* Acoustical Tile	SS-A-118 b Class D (1)	½"	12" 12" 12"	12" 24" 12"	825 825 825	X X X			
Kleentone Acoustical Tile			12" 12" 12"	12" 24" 12"	825 825 825		X X X		
Insulating Twin-Tile	LLL-F-321 b Class D		12" 16"	24" 32"	850 850			X X	
Insulating Panel-Tile			12" 16"	24" 32"	850 850			X X	
Custom Twin-Tile			12" 16"	24" 32"	875 875	X X			
Custom Panel-Tile			12" 16"	24" 32"	875 875	X X			
Decorative Insulating Plank			8" 12" 16"	8' 10'	850 850 850			(2)X	(2)X

DURON HARDBOARD PRODUCTS

DESCRIPTION	Type	Meets Federal Spec's. (3)	Typical-Minimum Modulus of Rupture psi		Smooth Surface (sides)	Finish
			Regular	Treated		
Hardboard	Regular or Treated	LLL-H-35	7,000 6,000 6,000	9,000 7,500 7,500	2	Natural (Brown)
Perforated Hardboard	Regular Regular Treated Treated Treated Heavy Duty Heavy Duty				2	
Hardboard Tile	Treated	LLL-H-35			1	
Underlayment	Regular	LLL-H-35	3,000		2	
STRUCTOBOARD*	Regular—Semi-hard	LLL-H-35	3,000		2	

"USG" "SHADOW-LOCK" "SHEETROCK" "FIRECODE" and "BAXBORD" are registered trademarks owned by United States Gypsum and used by it to distinguish its products. "USG" identifies the particular gypsum board sheathing, "SHADOW-LOCK" identifies the particular attachment system for asbestos shingles, "SHEETROCK", "BAXBORD" and "FIRECODE" identify the particular gypsum board manufactured only by United States Gypsum.

Width	Length	Edge	Approx. wt. lbs. Per M Sq. Ft.	Framing Spacing	Light Reflection	DESCRIPTION	Gen. Desc. (page)	Specification (page)
24″	48″	Square	725 1,550 2,250 3,000 3,750 4,500			Roof Insulation	4	10
24″	8′-0″	Beveled—Tongue & Groove—Long edges	2,320 3,060 4,490	24″ 32″ 48″	79%	Insulating Roof Deck (Regular)	5	10
24″	8′-0″	Beveled—Tongue & Groove—Long edges	3,095 4,525	32″ 48″	79%	Insulating Roof Deck (Vapor Seal)		
24″ 24″ 48″ 48″	8′-0″ 8′-0″ 8′ or 9′ 8′ or 9′	T & G—Long edges V-edge Long edges Square Square	1,300 860 1,300 860	12″, 16″ for ½ or 24″ for ²⁵⁄₃₂″		Insulating Sheathing	6	11
11¾″ 13½″ 15″ 15½″	48″	Square	600	12″ or 16″		Shingle Backer	5	11
4′	8′, 10″ or 12′	Square	750	12″ or 16″	75%	Insulating Building Board	7	
4′	8′ or 10′	Square	600	12″ or 16″	75%	DUPLEX Wallboard		

Surface					Slotted	Solid	Edge	General DESCRIPTION	General Description (page)	Specification (page)
Smooth	Textured	Regular	Random	Pin						
		X X X	X X X	X X X	X X X		Kwik-Lok Kwik-Lok Butt Bevel	QUIETONE* Acoustical Tile	8-9	11-12
X X X	X X X						Kwik-Lok Kwik-Lok Butt Bevel	Kleetone Acoustical Tile		
						X X	T&G— Kwik-Lok	Insulating Twin-Tile		
						X X	T&G— Kwik-Lok	Insulating Panel-Tile		
						X X	T&G— Kwik-Lok	Custom Twin-Tile		
						X X	T&G— Kwik-Lok	Custom-Panel-Tile		
						X	T&G— Kwik-Lok Long Edge	Decorative Insulating Plank		

Perforated (Hole Dia. 1″ c-to-c)	Solid	Edge	Thick-ness	Width	Lengths	Approx. Wt. lbs. per M Sq. Ft.		DESCRIPTION Wood Fiber Products	General Description (page)	Specification (page)
						Regular	Treated			
	X	Square	⅛″ ³⁄₁₆″ ¼″	2′ 3′ 4′	4′ 4′ 4′, 6′, 8′, 9′, 10′ or 12′	750 975 1,225	825 1,050 1,300	Hardboard	7	
X		Square	⅛″ ⅛″ ⅛″ ⅛″ ¼″ ¼″ ¼″	2′ 4′ 2′ 4′ 4′ 2′ 4′	3′, 4′, 6′, 8′ 3′, 4′, 6′, 8′ 3′, 4′, 6′, 8′ 3′, 4′, 6′, 8′ 6′, 8′ 4′, 6′, 8′ 4′, 6′, 8′	725	800 1,273 1,000 1,000	Perforated Hardboard	7	
	Bev. Cut	Square	⅛″	4′	8′ or 12′		800	Hardboard Tile	7	
	X	Square	⁷⁄₃₂″	4′	8′ or 12′	975		Underlayment	7	11
	X	Square	⁷⁄₃₂″	4′	8′ or 12′	975		STRUCTOBOARD*	7	

(1) SS-A-118 b, Class "C" available on special order. (2) Not available in some areas. (3) Verify with your U.S.G. Representative in your area.

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*T.M. Reg. U.S. Pat. Off

USG ROOF INSULATION

DESCRIPTION

USG Roof Insulation consists of ½″ layers of treated insulation board laminated together and is especially designed for use in above deck applications on all types of roof where a built-up type of waterproof covering is applied. It is available in three types; asphalt impregnated, asphalt coated or plain. They are made of pre-formed, felted, wood-fiber material integrally treated to give high resistance to moisture and water.

FUNCTION AND UTILITY

Thermal Conductivity: Plain, asphalt impregnated and asphalt coated roof insulation having a C factor of 0.36 meets or exceeds all requirements of Federal Spec. LLL-F-321-b class C; ASTM Standard Designation C-208-57T, Class C.

Adaptability: USG Roof Insulation is designed for use over all types of roof decks such as wood, concrete, gypsum, steel, etc. It is adaptable for use with pitched or flat roofs when applied according to roof deck manufacturers specifications.

Weight and size: USG Roof Insulation is available in a 24″ x 48″ size in the following thicknesses and approximate weights.

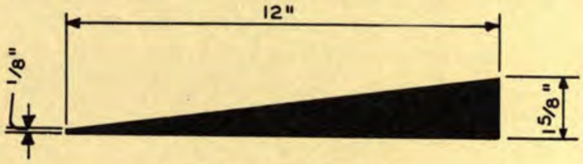
Thickness	½″	1″	1½″	2″	2½″	3″
Approximate wt. per sq. ft.	.72	1.55	2.34	3.16	3.97	4.79

LIMITATIONS OF USE

Although having excellent strength, USG Roof Insulation is primarily an insulating product and should not be considered for use as a structural material.

Storage: Care must be taken when storing USG Roof Insulation, especially when stored outside. Material must be protected from the elements with a waterproof covering and should be elevated off the ground. If the roof insulation should become wet, it will be necessary to allow it to dry before it is applied.

USG Tapered Edge Strip



Available—size: 12″ x 48″ or
18″ x 48″

USG Cant Strip

Base	Face	Length
4″	5⅝″	48″
3″	4¼″	48″

HEAT TRANSMISSION COEFFICIENT (U) of flat roofs covered with built-up roofing—no ceiling

Type of Roof Deck		No Additional Insulation	Roof Insulation Added					
			½″ C=0.72	1″ C=0.36	1½″ C=0.24	2″ C=0.18	2½″ C=0.15	3″ C=0.12
PYROFILL* GYPSUM ROOF DECK (supporting steel not included)	2″ PYROFILL on ½″ SHEETROCK* Form Bd.	0.36	0.24	0.18	0.14	0.12	0.11	0.09
	2″ PYROFILL on 1″ PYROFORM* Form Bb.	0.16	0.13	0.11	0.09	0.085	0.076	0.68
	2″ PYROFILL on 1″ Ins. Bd. Form Bd.	0.19	0.15	0.13	0.11	0.10	0.08	0.07
	2″ PYROFILL on 1″ USG Accoust. Form Bd.	0.20	0.16	0.13	0.11	0.10	.09	0.08
	2¼″ PYROFILL on ¼″ Asbestos Bd. Form Bd.	0.39	0.25	0.19	0.15	0.13	0.11	0.09
USG* Metal Edge Gypsum Plank Deck		0.51	0.30	0.21	0.16	0.14	0.12	0.10
USG* Steel Roof Deck		0.90	0.40	0.26	0.19	0.16	0.13	0.11
Concrete Deck	2″	(1)0.60	0.33	0.22	0.17	0.14	0.12	0.10
	4″	(1)0.45	0.28	0.20	0.16	0.13	0.11	0.09
	6″	(1)0.36	0.24	0.18	0.14	0.12	0.10	0.09
	2″	(2)0.78	0.37	0.25	0.18	0.15	0.12	0.10
	4″	(2)0.70	0.35	0.24	0.18	0.15	0.12	0.10
	6″	(2)0.63	0.34	0.23	0.17	0.15	0.12	0.10
Wood Deck	1″—Actual 25/32″	0.48	0.29	0.21	0.16	0.14	0.11	0.09
	2″—Actual 1-5/8″	0.32	0.22	0.17	0.14	0.12	0.10	0.09
	3″—Actual 2-5/8″	0.26	0.19	0.15	0.12	0.11	0.09	0.08
Precast Cement Tile 1 5/8″		0.64	0.34	0.23	0.17	0.15	0.12	0.10

(1) Based on lightweight aggregate having a density of 100 lbs. per cubic foot. "K"-factor—0.36
(2) Based on sand and gravel or stone—not dried.

*T. M. Reg. U. S. Pat. Off.

USG INSULATING ROOF DECK

DESCRIPTION

USG Insulating Roof Deck, consisting of ½" layers of wood fiber insulation board laminated with a moisture resistant adhesive, provides a strong, rigid, lightweight insulating roof deck. Long edges have tongue and groove joints, and a slight bevel on the painted ceiling side of the board. Short edges are square and rest on framing members. The under or ceiling side, has a high light reflective Hi-Lite painted finish. Available in both regular or vapor sealed types.

FUNCTION AND UTILITY

Built-up Roof: Covered with a good built-up roof assembly, this deck provides excellent insulation and protection for flat, pitched or mono-sloped roofs in residential construction.

Shingled Roof: Asphalt shingles may be applied to 2" or 3" thick insulating roof deck, when the pitch is 4" in 12" or greater. Shingles shall be the self-sealing or interlocking types. Regular 3 in 1 thick butt shingles may be used if all tabs are cemented down by spot application of plastic cement at the time of shingle application.

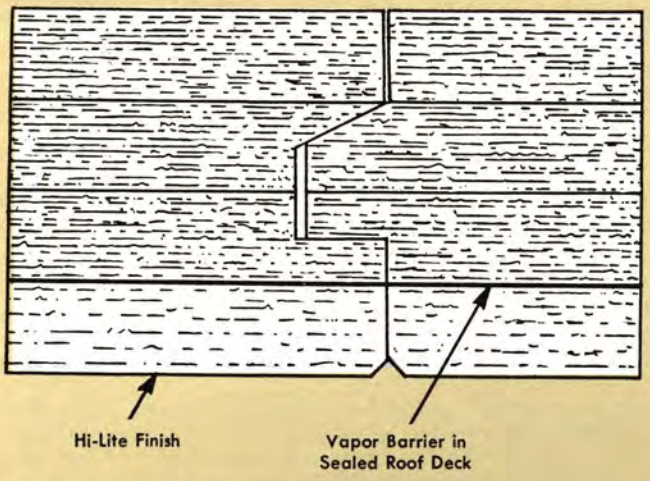
Maintenance: Soiled spots or dirt areas may be removed with ordinary putty type wallpaper cleaner. Abrasions may be refinished following normal painting procedures. Paint exterior exposed surfaces on porches or overhangs, using primer-sealers and exterior oil paints.

LIMITATIONS OF USE

USG Regular Insulating Roof Deck is to be used only where the average January isotherm is above 40° F.

USG Vapor Sealed Insulating Roof Deck is for cold climates and areas having extremely high humidity conditions. Where January isotherm is below 40° F, the vapor seal type is required.

Framing beams must be at least 3" wide to provide the necessary strength and nailing surface. Thickness of the beam shall be adequate to support the maximum load requirements forthe particular geographical location where material is to be used.



PRODUCT DATA

Size 2' x 8'	Thickness	Maximum Framing C to C	Approx. wt. per sq. ft.
Standard Roof Deck	1½" 2" 3"	24" 32" 48"	2.3 lbs. 3.1 lbs. 4.5 lbs.
Sealed Roof Deck	2" 3"	32" 48"	3.1 lbs. 4.5 lbs.

Builds

Decorates

USG SHINGLE-BACKER

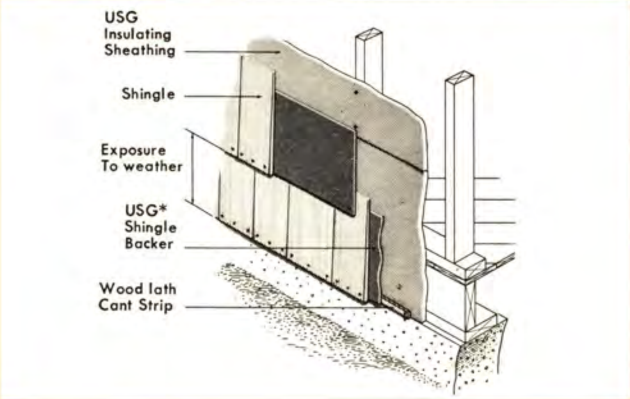
DESCRIPTION

USG Shingle-Backer is used as an insulated undercourse for wood shingle siding. It eliminates the use of wood shingles for such undercourses.

FUNCTION AND UTILITY

USG Shingle-Backer may be used over USG Insulating Sheathing or Wood Sheathing. When used in conjunction with 25/32" USG* Insulating Sheathing on conventional construction, the U-factor of the wall is .17 Btu. This reflects a savings of over 40% in heat loss as compared to an uninsulated wall.

USG Shingle-Backer is available in 4 foot long panels and four widths. 11¾" wide Shingle-Backer is used for 12" asbestos-cement shingles having a 10½" exposure to the weather. 13½" Shingle-Backer is used for 16" wood shingles exposed up to 12" to the weather. 15½" Shingle-Backer should be used for 18" wood shingles exposed from 12" to 14" to the weather. 16" wood shingles for 13½" exposure with 15" Shingle-Backer.



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*T.M. Reg. U.S. Pat. Off

USG* Insulating Sheathing

DESCRIPTION

An insulating exterior wall sheathing integrally treated to make it moisture resistant. USG Insulating Sheathing is treated two ways—asphalt coated and asphalt impregnated. The 25/32″ x 2′ x 8′ size has a tongue-and-grooved joint on the long edges. The ½″ x 2′ x 8′ size has a V-joint on the long edges. Other sizes, 4′ wide by 8′ or 9′ long, have square edges and are either 25/32″ thick or ½″ thick.

In addition to our above mentioned regular types of insulating sheathing, USG Super-Strength Insulating Sheathing is available in certain areas of the United States. USG Super-Strength Insulating Sheathing is a high density asphalt impregnated wood fiber sheathing that eliminates the need for let-in corner bracing and also allows the direct application of asbestos and wood shingles. Available in ½″ x 4′ x 8′, or 9′ sizes with a square edge only. Contact nearest USG Sales Office for availability in your area.

FUNCTION AND UTILITY

This excellent insulating sheathing has many uses. Most commonly designed to sheath the exterior of frame walls and is covered with wood siding, brick veneer, wood or asbestos shingles or stucco.

Strength. A wall sheathed with 25/32″ USG insulating sheathing possesses greater bracing and stiffening strength than a wall sheathed horizontally with conventional narrow sheathing units. Tests conducted at the Forest Products Laboratory, Madison, Wisconsin, indicate that a wall sheathed with 25/32″ structural insulating board sheathing, has a rigidity factor of 3.0 compared to a factor of 1.0 for horizontal wood sheathing. USG 25/32″ sheathing meets the structural requirements established in F.H.A. Technical Circular No. 12, covering the use of 4 foot wide insulating sheathing without diagonal bracing.

Insulating Value. The "k" value of USG Insulation is approximately 0.36 and its resistivity compares with 38″ of stone concrete.

Tensile Strength. USG Structural Insulating products exceed all requirements set up by Federal Specification LLL-F-321b, and Commercial Standard 42-49.

Light Weight. The 25/32″ thickness weighs approximately 1200 pounds per M square feet. The ½″ thickness weighs approximately 800 pounds per M square feet.

Wind-Tight. USG Insulating Sheathing, 25/32″ x 2′ x 8′, is provided with a fitted tongue-and-groove joint on longitudinal edges and ends are joined over supports, thus making windtight joints. The use of building paper is unnecessary and not recommended.

Costs. The material cost is low, and waste from these large units is negligible. Approximately 1200 square feet is erected per man per day.

LIMITATIONS OF USE

During storage, inside or outside, care must be taken to keep the material dry. On outside storage the materials must be protected from the elements with a suitable waterproof covering and should be elevated off the ground. If the Insulating Sheathing should become wet it should be allowed to dry before application.

NAILING OR STAPLING

REGULAR TYPE

NAILING (With Let-in Corner Bracing)

Thickness of Sheathing	Maximum Stud Spacing	Minimum Length of Roofing Nail	Diameter of Nail Head	Spacing on Studs	
				Edges of Sheet	Intermediate Studs
½ in.	16″ o.c.	1¾″	⅜ in.	4 in.	8″ o.c.
(1)25/32 in.	(1)24″ o.c.	2″	⅜ in.	4 in.	8″ o.c.

STAPLING (With Let-in Corner Bracing)

Thickness of Sheathing	Maximum Stud Spacing	Gauge of Staple	Minimum Crown of Staple	Minimum Length of Staple	Spacing on Studs	
					Edges of Sheet	Intermediate Studs
½ in.	16″ o.c.	16	7/16 in.	1⅛ in.	4 in.	6 in.
½ in.	24″ o.c.	14	7/16 in.	1⅛ in.	4 in.	8 in.
25/32 in.	24″ o.c.	16	7/16 in.	1½ in.	4 in.	6 in.
25/32 in.	24″ o.c.	14	7/16 in.	1½ in.	4 in.	8 in.

STAPLING (Without Let-in Bracing) (2)

25/32 in.	16″ o.c.	16	7/16 in.	1½ in.	3 in.	6 in.
25/32 in.	16″ o.c.	14	7/16 in.	1½ in.	4 in.	8 in.

(1) Where let-in corner bracing is omitted, the maximum stud spacing is 16″ o.c. and the nail spacing 3″ and 6″ o.c. respectively.

(2) For ½″ thickness for use without corner bracing inquire about U.S.G. Super Strength Sheathing.

NOTE: Nails or legs of staples shall not be less than ⅜″ from the edge.
7/16″ exposed crown of staples to be parallel to edge of sheathing.

SUPER STRENGTH

NAILING (With Let-in Corner Bracing)

Thickness of Sheathing	Maximum Stud Spacing	Minimum Length of Roofing Nail	Diameter of Nail Head	Spacing on Studs	
				Edges of Sheet	Intermediate Studs
½ in.	16″ o.c.	1½ in.	7/16 in.	4″ o.c.	8″ o.c.

NAILING (Without Let-in Corner Bracing)

½ in.	16″ o.c.	1½ in.	7/16 in.	3″ o.c.	6″ o.c.

STAPLING (With Let-in Corner Bracing)

Thickness of Sheathing	Maximum Stud Spacing	Gauge of Staple	Minimum Crown of Staple	Minimum Length of Staple	Spacing on Studs	
					Edges of Sheet	Intermediate Studs
½ in.	16″ o.c.	16	7/16 in.	1½ in.	4″ o.c.	6″ o.c.
½ in.	16″ o.c.	14	7/16 in.	1⅛ in.	4″ o.c.	8″ o.c.

STAPLING (Without Let-in Corner Bracing)

½ in.	16″ o.c.	16	7/16 in.	1½ in.	3″ o.c.	6″ o.c.
½ in.	16″ o.c.	14	7/16 in.	1½ in.	4″ o.c.	8″ o.c.

NOTE: Nails or legs of staples shall not be less than ⅜″ from the edge.
7/16″ exposed crown of staples to be parallel to edge of sheathing.

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*T.M. Reg. U. S. Pat. Off.

USG INSULATING BUILDING BOARD

DESCRIPTION

USG Insulating Building Board is a highly efficient, lightweight, rigid, square-edged, wood-fiber insulating board. Manufactured ½″ thick, 4′ wide and 8′, 10′, 12′ long, with an attractive Hi-Lite stipple-texture surface finish.

FUNCTION AND UTILITY

USG Insulating Building Board provides excellent thermal insulation for walls, ceilings and floors in all types of light construction—prefabricated buildings, attic walls and ceilings, recreation rooms, basement and storage rooms, garage lining, summer cottages, etc. In addition to its high insulating value ("k—0.36) its structural qualities add bracing strength and rigidity to the framing.

The Hi-Lite, plastic-coated stipple texture provides an attractive predecorated surface that may be cleaned with wallpaper cleaner—or redecorated with any standard paint (TEXOLITE* paints are recommended). USG Insulating Building Board is readily cut or shaped to fit with ordinary tools. The large sheets are easily and quickly erected, lending further economy to its use.

LIMITATIONS OF USE

1. Supports must be spaced not to exceed 16″.
2. It should not be subjected to extremely high moisture conditions.
3. When used in poultry houses, it should be protected by applying one of the following materials over its surface: Hardboard, Asbestos, fine wire screening, etc. This should only be done in areas accessible to the chickens or other poultry.

DUPLEX* WALLBOARD

DESCRIPTION

DUPLEX Wallboard is a lightweight, rigid, square-edged, wood-fiber board—⅜″ thick, 4′ wide and 8′ and 10′ long, with Hi-Lite, stipple-texture finish.

FUNCTION AND UTILITY

As a low-cost predecorated utility wallboard, DUPLEX is used extensively for finishing walls and ceilings in attics, garages, cottages, basements and all types of temporary buildings.

LIMITATION OF USE

While its "k" value is 0.36—because of its ⅜″ thickness and correspondingly reduced insulating effectiveness, DUPLEX Wallboard is recommended for use where the insulating function is of secondary importance, and where its thickness, strength and rigidity are satisfactory for the purpose.

DURON* HARDBOARDS

DESCRIPTION

DURON Hardboard is a strong, versatile ligno-cellulose material produced from natural wood by a special U.S.G. process. Both surfaces of USG DURON Hardboard are exceptionally smooth and has no grain or knots. This highly dense hardboard is manufactured both untreated and treated.

FUNCTION AND UTILITY

USG DURON Hardboard has a 1001 uses. Due to its various sizes, lightweight strength, and durability, this material is adaptable to both structural and commercial uses. USG DURON Hardboard can be sawed, nailed, punched, cut, bent, laminated, and decorated.

Paintable—DURON Hardboard's two hard homogeneous surfaces are exceptionally paintable; will take almost any form of finish—even wood graining and high gloss enamels.

Durable—Hardness without extreme brittleness, highly resistant to scuffing, abrasive action and indentation.

Smooth—Sleek, tight and smooth both sides; surface does not necessarily require further finishing—lends itself readily to laminating to itself or wood framing.

Strong—Strength is exceptional in relation to thickness, weight and density.

Workable—Adaptable to almost any fabrication form with conventional wood working equipment.

Economical—Showing significant savings in costly finishing materials, DURON is economical for the simple job . . . flexible for the complex job . . . Truly DURON is the Hardboard of 1001 uses.

TYPES

Regular DURON Hardboard—A knotless, grainless, dense and exceptionally hard and flexible board. Light in weight, it is capable of taking unusual wear and tear. *All Regular* DURON *has two smooth sides* which can take a wide variety of finishing processes. Regular DURON is available in ⅛″, 3/16″ or ¼″ thickness.

Treated DURON Hardboard—Stronger than Regular DURON Hardboard and also smooth-two-sides. Treated DURON has harder, more moisture-resistant and scuff-resistant surfaces that excel in finishability. Treated DURON has been impregnated with special oils, which are polymerized by baking. Available in ⅛″, 3/16″ or ¼″ thickness.

Sizes: Regular and treated ⅛″ and 3/16″ available in: 4 x 2, 4 x 3, 4 x 4, 4 x 6, 4 x 8, 4 x 9, 4 x 10, and 4 x 12. Regular and treated ¼″ available in 4 x 2, 4 x 3, 4 x 4, 4 x 6, 4 x 8, 4 x 10, and 4 x 12. (*See Note under Structoboard.*)

STRUCTOBOARD

Although manufactured by the same process as the hardboard, and possessing many of the same qualities and physical characteristics, because of its lesser density and corresponding lower strength and hardness, it is not classified as a hardboard. Available sizes are: 4 x 3, 4 x 4, 4 x 6, 4 x 8, 4 x 10, and 4 x 12. (*Note: 4′ x 16′ size available in some areas.*)

HARDBOARD UNDERLAYMENT

DURON Underlayment is an excellent base for linoleum, asphalt tile, vinyl tile, rubber tile, cork tile and other floor coverings. The strong rigid sheets eliminate the uneveness in the sub-floor and cover the joints and cracks. It is easily nailed and its smooth level surface assures a good bond between the underlayment and the linoleum or tile. This ¼″ material is available in both 4 x 3 and 4 x 4.

PERFORATED HARDBOARD

⅛″ Regular—Smooth both sides, this material has perforations 3/16″ on 1″ centers. Commonly used as room divider or to hang light weight tools and utensils. Available in 4 x 3, 4 x 4, 4 x 6, 4 x 8, 2 x 3, 2 x 4, 2 x 6, and 2 x 8.

⅛″ Treated—Smooth both sides with 3/16″ perforations on 1″ centers. Widely used throughout the home, it is especially adaptable in places where strength and moisture-resistance is a factor. Extremely strong, it can withstand a high degree of rough usage. Available in same sizes as ⅛″ Regular Perforated Hardboard.

¼″ Heavy Duty—Smooth both sides with 9/36″ perforations on 1″ centers. Extremely suitable for room dividers and where heavy objects are to be hung, such as garden and maintenance equipment. It is both untreated and treated. The untreated board is available in 4 x 4, 4 x 6, 4 x 8, 2 x 4, 2 x 6, and 2 x 8. Treated is only available in 4 x 6 and 4 x 8.

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*T.M. Reg. U.S. Pat. Off

DECORATIVE INSULATIONS

DESCRIPTION

USG Decorative Insulation is rigid wood fiber insulating board made into predecorated interior wall and ceiling units. The products are fabricated from homogeneous mats manufactured of wood fiber produced from new timber.

USG wood fiber ceiling tiles provide economical materials for interior finishing in residential, commercial and institutional construction and remodelling. In addition to decoration, QUIETONE* Ceiling Tiles furnish an economical means of sound conditioning interior areas.

PANEL-TILE

Panel-Tile is an unscored rectangular ceiling tile that can be installed to produce varied rectangular designs, rather than a square-patterned ceiling. Used with square tile or USG Twin-Tile, interesting ceiling mosaics can be developed. Available with tongue-and-groove edge in sizes: 12" x 24" and 16" x 32". Color: Hi-Lite (Ivory) finish. Thickness: ½".

TWIN-TILE

TWIN-TILE* is the original double-size ceiling tile. This larger unit permits a faster, stronger installation with staggered joints. Twin-Tile is manufactured with a tongue and groove edge. Sizes: 12" x 24" and 16" x 32". Thickness: ½-inch. Color: Hi-Lite (Ivory) finish.

USG CUSTOM TILE

This tile provides the ultimate ceiling treatment for interiors which do not require a sound conditioning material. USG Custom Tile features smooth painted bevelled edges and a bright, white surface with a light reflectance of more than 80%. Custom Tile is available in both Twin-Tile (cross-scored units to resemble square tile) and Panel Tile. Sizes: 12" x 24". Thickness: ½". Edge: Tongue and Groove. Color: Bone White.

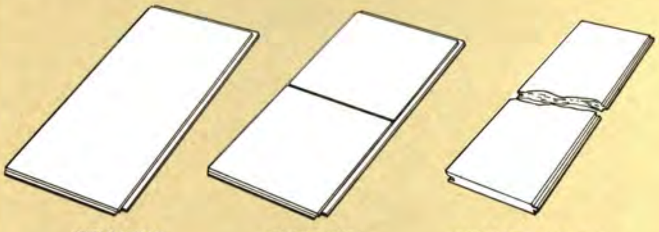
USG* KLEENTONE

USG* KLEENTONE Acoustical Tile is a highly efficient sound absorbing surface that can be cleaned easily with soap and water. The acoustical qualities of this tile are derived by transmitting the sound by the diaphragmatic action of the plastic surface into the sound absorbing holes in the wood fibered tile backing. USG KLEENTONE is produced with two surface designs—Textured and Smooth.

Due to its unique characteristics, this tile is recommended for use in kitchens and bathrooms as well as all other rooms in the home. USG KLEENTONE is available in the following sizes: 12" x 12" Bevel Butt edge; 12" x 24" Twin Tile Tongue and Groove edge; and 12" x 12" Tongue and Groove edge. Color: White. Thickness ½".

USG PIN-PERFORATED

USG PIN-PERFORATED QUIETONE acoustical tile is a highly efficient sound absorbing wood fiber ceiling tile. Each square foot of this tile has more than 1000 micro perforations. USG Pin-Perforated QUIETONE is available in the following sizes: 12" x 12" Bevel Butt edge, 12" x 24" Twin Tile Tongue and groove edge; and 12" x 12" Tongue and Groove edge (Eastern half of United States). Color: Bone White. Thickness ½".



INSULATING PANEL TILE, HILITE FINISH

INSULATING TWIN TILE, HILITE FINISH

INSULATING PLANK, HILITE OR BLENDTEX FINISH

USG KLEENTONE—smooth

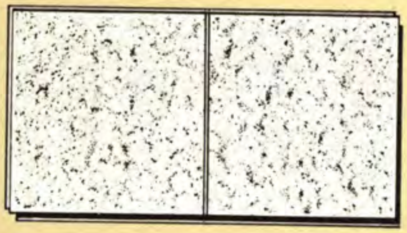
Available in square tile, or twin tile (center scored); solid smooth surface; white only.

Thickness: ½"
Size: 12" x 12"
12" x 24"

USG KLEENTONE—textured

Available in square tile, or twin tile (center scored); solid, textured surface; white only.

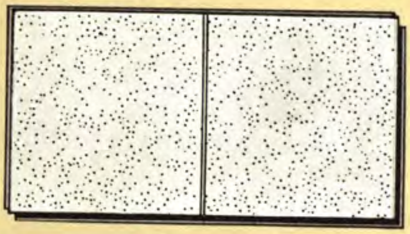
Thickness: ½"
Size: 12" x 12"
12" x 24"



PIN PERFORATED QUIETONE

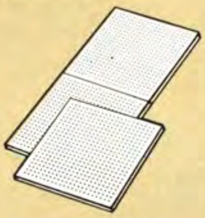
Available in square tile, or twin tile (center scored); Random pin perforated surface.

Thickness: ½"
Size: 12" x 12"
12" x 24"

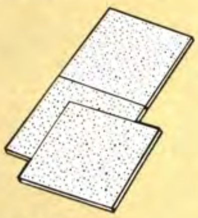


QUIETONE ACOUSTICAL TILE

PERFORATED SURFACE



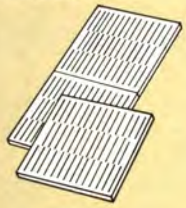
RANDOM PERFORATED



Both available as square tiles (for adhesive application) or center scored twin-tiles (for concealed nailing or stapling).

QUIETONE ACOUSTICAL TILE*—SLOTTED SURFACE

Both available as square tiles (for adhesive application) or center scored twin-tiles (for concealed nailing or stapling).



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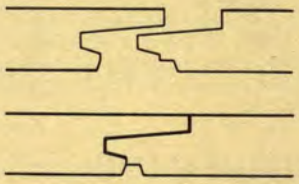
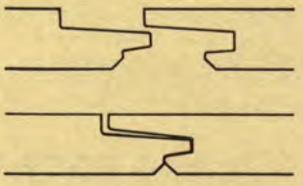
KWIK-LOK JOINT DETAILS



Joint on sides and end of Twin-Tile, Panel Tile, Kleentone Twin-Tile and long edges of Decorative Plank.



Joint on sides and ends of regular random, and pin perforated QUIETONE Acoustical Twin-Tiles, also Custom Tiles, and Slotted QUIETONE.

QUIETONE* WOOD FIBER ACOUSTICAL TILE

QUIETONE Acoustical Ceiling Tile is available with three different patterns of acoustical surfaces. Regular Pattern QUIETONE has 3/16″ hollow-drilled holes spaced ½-inch on centers across the entire surface of the tile. Random Pattern QUIETONE has varying-sized perforations scattered across the exposed surface of the tile. The new Slotted QUIETONE offers acoustical treatment and decoration through crisply cut, regularly spaced slots in the tile surface. All QUIETONE ceiling tile has a highly light-reflecting, soil-resisting, white paint surface. Sizes: 12″ x 24″, 12″ x 12″. Thickness: ½-in. and ¾-in. Edge: Tongue and groove (12″ x 24″ only) and Butt Bevel (12″ x 12″ only). Color: Bone White.

FUNCTION AND UTILITY

Decorative—Many designs and patterns are possible with combinations of various sizes of tile.

Insulating—The ½″ thickness, with a thermal conductance of 0.72, is equal to approximately 19″ of stone concrete in resistance to heat transfer.

Tongued and Grooved—The Kwik-Lok joint featured on Twin-Tile and Panel-Tile, is designed specially for application utilizing the automatic stapling machine or tacker. This wide flange tongue and groove edge interlocks securely preventing harmful discoloration caused by joint "breathing" and assures better alignment of units for true and level ceilings.

Economical—Sizes 12″ x 24″ and 16″ x 32″, ½″ Twin-Tile are center-scored to exactly simulate 12″ x 12″ and 16″ x 16″ patterns. This "two-in-one" feature reduces application costs on square patterns by at least 40%. Panel-Tile unit sizes are the same as Twin-Tile but without the center scoring. This produces a rectangular instead of a square pattern. The stapling method of application offers a saving up to 50%.

Easy Application—USG Tile may be stapled or nailed to conventional wood supports or may be applied to solid surfaces with adhesives. Practically any type of interior wall or ceiling may be finished with these materials.

Easily Maintained—Ordinary surface dust may be removed by using wallpaper cleaner. Redecorating may be done with good lead and oil or water-thinned emulsion paints; TEXOLITE* is recommended.

LIMITATIONS OF USE

1. Supports must be spaced not to exceed 16″.
2. Where adhesive method of application is used, the adhesive must be prepared and used in strict accordance with manufacturer's directions.

USG KLEENTONE ACOUSTICAL TILE (1)

SOURCE: Acoustical Materials Assoc.

DESCRIPTION	THICKNESS	MOUNTING (3)	COEFFICIENTS AT CYCLES SHOWN						NRC	WEIGHT
			125	250	500	1000	2000	4000		PSF
Smooth	½″	#1	.07	.28	.67	.72	.70	.40	.60	0.83
		#2	.19	.64	.50	.71	.68	.43	.65	0.83
Textured	½″	#1	.03	.27	.67	.72	.77	.50	.60	0.85
		#2	.18	.72	.53	.69	.77	.50	.70	0.85

(1) Plastic Faced.

QUIETONE ACOUSTICAL TILE (2)

SOURCE: Acoustical Materials Assoc.

DESCRIPTION	THICKNESS	MOUNTING (3)	COEFFICIENTS AT CYCLES SHOWN						NRC	WEIGHT
			125	250	500	1000	2000	4000		PSF
Regular Perforated	½″	#1	.14	.27	.61	.68	.66	.68	.55	0.74
		#2	.15	.69	.48	.59	.70	.68	.60	0.74
Random Perforated		#1	.11	.26	.52	.57	.60	.66	.50	0.73
		#2	.18	.60	.40	.47	.63	.77	.55	0.74
Pin Perforated		#1	.00	.00	.00	.00	.00	.00	.00	0.00
		#2	.00	.00	.00	.00	.00	.00	.00	0.00

(2) Tiles tested were painted with a full finish coat of paint.

LIGHT REFLECTION: Bone white—79%
HEAT CONDUCTIVITY: k=0.38

(3) Mounting No. 1—Cemented to plasterboard—Considered equivalent to cementing to plaster or concrete ceilings.

Mounting No. 2—Nailed to wood strips.

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USG INSULATING ROOF DECK

Unless otherwise shown on plans, all roofs shall be decked with (USG Regular Insulating Roof Deck) (USG Sealed Insulating Roof Deck) manufactured by United States Gypsum Company and installed in accordance with the manufacturer's recommendations and application methods.

USG ROOF INSULATION

SCOPE

As shown on plans the following roof areas shall be insulated with fiber board rigid roof insulation.

GENERAL

All insulation shall be kept dry during and after application. The surface of the roof deck shall be sound, broomed clean, free from dirt, reasonably smooth and thoroughly dry. Only as much USG Roof Insulation shall be laid over roof area as can be covered with finished roofing in one day. Boards shall be placed together snugly but never forced into place. Boards shall be laid in parallel courses with end joints of each course breaking with those adjoining courses.

MATERIAL

Insulation shall be (specify C-factor 0.72, 0.36, 0.24, 0.15 0.12) USG Roof Insulation as manufactured by the United States Gypsum Company. Size shall be 24″ x 48″.

Vapor Barrier

Vapor barriers shall be used on decks of heated buildings wherever the average January temperature is below 45°F. Vapor barriers shall be used on all buildings in which excessive moisture conditions prevail. The vapor barrier shall consist of two plies of 15 lb. felt solidly mopped together, or a simple ply of 45 lbs. per square coated asphalt roofing felt, applied with coated surface down. The vapor barrier shall be wrapped around the insulation and mopped back 6 inches at walls and other vertical projections.

Water Cut-Offs

The roof insulation shall be isolated in areas no greater than 30 square feet over the entire roof and at first full insulating board joint back from parapet walls or borders.

APPLICATION OVER WOOD DECKS

Where No Vapor Barrier is Used

Space nails 12 inches apart. Each board shall be secured in place by nailing each edge and staggered along the longitudinal center line. If two layers of insulation are used, nailing should be through both layers. Use large-headed galvanized nails (not less than $\frac{7}{16}$ inch head) of sufficient length to pass through the insulation and penetrate the roof boards at least $\frac{3}{4}$″. Nails should not pass through the roof deck.

With Vapor Barrier Coal Tar Pitch

The wood deck shall be covered with red rosin sheathing paper and two plies of 15 lbs .tarred felt. Lay successive felt plies with 19″ overlap and solidly mop between plies. The laps to be front nailed on 18″ centers with caps and nails.

Vapor Barrier—Asphalt Application

Over the entire roof apply a vapor barrier consisting of two plies of 15 lbs. asphalt felt, each sheet laid 19 inches over the preceding one, and each sheet back-nailed at intervals not to exceed 18″. Mop solidly the 19 inch lap with steep roofing asphalt.

Alternate:

Apply a vapor barrier sheet of 45 lb. coated (both sides) asphalt roofing felt, lapping each sheet 4″ and solidly cementing these laps. Nail each lap with galvanized barbed roofing nails spaced not over 2″ O.C.

Application of Insulation by Mopping

Embed each board firmly in a solid mopping of bitumen. Only sufficient area to provide complete embedment of each insulating board shall be mopped at a time. Where two layers of insulating board are to be applied, solid mop the exposed surface of the first layer liberally with hot bitumen. Embed each board of the second layer firmly in the solid mopping of bitumen.

APPLICATION OVER CONCRETE, GYPSUM AND UNIT TILE

Priming the deck—If coal tar pitch is used no primer is necessary. If asphalt is used, prime the deck with asphalt primer.

Vapor Barrier

A vapor barrier shall be used in all cases on poured concrete and poured gypsum decks. Apply two plies of 15 lbs. felt lapped half. Each ply shall be solidly mopped to the deck and also between plies, followed by thorough brooming down of felts. If deck is of poured gypsum, strip or center mopping shall be used. Over precast cement slabs, gypsum plank, book tile or similar units, apply (insulation board) (vapor barrier) directly to deck by spot strip or center mopping, keeping the mopping back approximately 4 inches from the joints when using pitch. If steep asphalt is used, it may be solidly mopped.

Application of Insulation

See application of insulation by mopping.

APPLICATION OVER STEEL DECKS

The steel deck shall have a shop coat of paint or primer. Pitch shall not be used for bonding felt or insulation to steel decks. Application of insulation—see application by mopping.

NOTE: Where Building Codes require incombustible construction, a non-flammable emulsion and mechanical fasters must be used in accord with the roof deck manufacturers specifications.

Application Over Steel-Sloping Decks

Where insulating board is applied over roof decks having a slope of 1″ or more per foot, each board shall be secured to the steel deck with mechanical fasteners supplied by the deck manufacturer. Mopping of bitumen should be used to augment the mechanical fasteners.

On steep roof decks having a slope of 3 inches or more per foot, provision shall be made for additionally securing the roof insulation by nailing or other mechanical fastening in accordance with the roofing manufacturers' requirements.

Application of Built-up Roofing

Built-up roofing shall be applied in accordance with manufacturer's specifications.

USG INSULATING SHEATHING

SCOPE

Unless otherwise shown on plans, all exterior walls shall be sheathed according to these specifications.

MATERIALS

Sheathing shall be USG Insulating Sheathing, manufactured by United States Gypsum Company.

Nails shall be galvanized, $\frac{7}{16}$″ head diameter, $1\frac{3}{4}$″ long roofing nails for $\frac{25}{32}$″ sheathing, and $1\frac{1}{2}$″ long for $\frac{1}{2}$″ sheathing.

APPLICATION

Apply USG $\frac{25}{32}$″ or $\frac{1}{2}$″ Insulating Sheathing with the long dimension across the supports and with the protruding edge up. Ends of sheets shall abut over centers of supports, and all end joints shall be staggered.

*T.M. Reg. U.S. Pat. Off.

Apply 25/32″ or ½″ by 4 ft. wide sheathing with long dimension parallel with the supports. Sides and ends shall abut the vertical framing members, top and bottom plates or headers. Fit snuggly around all windows and door openings. Secure sheathing to studs with nails spaced approximately 3″ on outside framing members (6″ apart on intermediate framing) except where exterior finish is secured to the frame with nails driven through the sheathing and into the studs, in which case nails be spaced approximately 8″ on centers.

Nail to intermediate studs first. Nails shall be not less than ⅜″ from edges or ends of sheathing.

USG HARDBOARD UNDERLAYMENT

New Construction

1. Sub-floor should be properly nailed tongue-and-groove flooring, dry and well seasoned. Building paper should be laid over sub-floor prior to application of underlayment, except over unheated crawl spaces, use a vapor barrier instead of building paper.

Extreme

2. Irregularities in the sub-floor should be minimized by sanding high spots or filling low spots.
3. Hardboard Underlayment panels shall be unwrapped and separately placed on edge about interior for 24 hours prior to installation. Underlayment shall not be installed until all masonry work is completed and the building is free of dampness.
4. Nail Application. Start application in corner of room. Allow ⅛″ between underlayment and wall. Allow 1/16″ spacing between adjoining panels. Joints in underlayment shall not fall directly on joints in sub-floor. Use 1¼″ annular ringed drive screw underlay nails, or 4d cement-coated sinker-nails. Space nails 6″ apart over entire panel and not closer than ⅜″ to the edge. Begin nailing at center of panel. Underlayment joints should be staggered. Nails should be set flush.
5. Staple Application. Use No. 77DC staple applied with a Model AF Spotnailer nailing machine. Starting at center of panel, space staples 6″ apart over entire surface and 3″ apart around edges and ½″ from the edge. Glue asphalt felt over underlayment prior to application of thin linoleum or plastic tiles.

USG SHINGLE BACKER

Shingle Backer shall be USG Shingle-Backer as manufactured by the United States Gypsum Co.

Use of Wood, Asbestos Cement or Slate Shingles over USG Insulating Sheathing

Apply USG Shingle-Backer over USG Insulating Sheathing:

(a) **Wood Shingles:** Nail a cant strip of wood lath to bottom edge of sidewall to provide a nailing base for the first course of Shingle-Backer and shingles.

(b) Apply first course of Shingle-Backer extending ½″ below the cant strip. Center end joists on studs. Nail with 8d, 2½″ galvanized box mails at the bottom of the unit at each stud and nailing through the cant strip, sheathing, and into the stud.

(c) First course of wood shingles is nailed with butt edge extending ½″ below first course of Shingle-Backer. Nail shingles along butt edge with 2″ annular ringed or grooved galvanized nails centered on and penetrating into the wood cant strip.

(d) Before applying a second course of Shingle-Backer determine the exposure desired for shingles. Use shiplap wood sheathing or chalk line to provide alignment. Wood cant strip is eliminated on this and succeeding courses. The Shingle-Backer is nailed with 8d galvanized nails along the lower edge at stud locations. Nails are driven through the first course shingle and Shingle-Backer, sheathing and into the studs.

DECORATIVE & ACOUSTICAL WOOD FIBER TILES

1. SCOPE

(Architect will list all areas to receive acoustical or decorative treatment).

2. GENERAL PROVISIONS

2a. Bases to receive acoustical or decorative units and the units themselves shall not be installed unless satisfactory closures for windows and other openings are in place and roofs are tight. Temperatures in working areas shall be well above freezing.

2b. Bases to receive acoustical or decorative units adhesively applied shall be clean, sound, dry and free of moisture.

2c. The area or room in which acoustical or decorative units are to be installed shall not be damp; i.e., plaster, terrazzo floor, etc., shall be previously installed and dry.

2d. Acoustical or decorative units shall not be adhesively installed to roof slabs during extremely hot weather.

3. MATERIALS

3a. Acoustical Tile Shall be

3a-1. SLOTTED QUIETONE Wood Fiber Acoustical Tiles (½″ thickness x 12″ x 12″ Butt Bevel, or 12″ x 24″ with Kwik-lok Tongue and Groove edges) as manufactured by United States Gypsum Company. (Specify finish; Bone White).

3a-2. REGULAR PERFORATED QUIETONE Wood Fiber Acoustical Tiles (½″ thickness x 12″ x 12″ Butt Bevel, or 12″ x 24″ with Kwik-lok Tongue and Groove edges) as manufactured by United States Gypsum Company. (Specify finish; Bone White).

3a-3. RANDOM PERFORATED QUIETONE Wood Fiber Acoustical Tiles (½″ thickness 12″ x 12″ Butt Bevel, or 12″ x 24″ with Kwik-lok Tongue and Groove edges) as manufactured by United States Gypsum Company. (Specify finish; Bone White).

3a-4. PIN-PERFORATED QUIETONE Wood Fiber Acoustical Tile (½″ thickness x 12″ x 12″ Butt Bevel, or 12″ x 12″ Kwik-lok Tongue and Groove edges, or 12″ x 24″ Twin Tile Kwik-lok Tongue and Groove edges) as manufactured by United States Gypsum Company. Finish to be Bone White in color.

3a-5. USG KLEENTONE Acoustical Wood Fiber Tile (½″ thickness x 12″ x 12″ Butt Bevel, or 12″ x 12″ Kwik-lok Tongue and Groove edges, or 12″ x 24″ Twin Tile Kwik-lok Tongue and Groove edges) as manufactured by United States Gypsum Company. (Specified finish: White Vinyl plastic or White Vinyl.

3a-6. INSULATING TWIN-TILE, a center scored, solid surface Wood Fiber Tile (½″ thickness 12″ x 24″, or 16″ x 32″ with Kwik-lok Tongue and Groove edge) as manufactured by United States Gypsum Company. (Specify finish; Hi-Lite).

3a-7. INSULATING PANEL-TILE, a solid surfaced, Wood Fiber Tile, (½″ thickness, 12″ x 24″, or 16″ x 32″ with Kwik-lok Tongue and Groove edge) as manufactured by United States Gypsum Company. (Specify finish: Hi-Lite).

3a-8. CUSTOM TWIN-TILE, a center scored, solid surfaced Insulating Wood Fiber Tile, (½″ thickness 12″ x 24″ or 16″ x 24″ with Kwik-lok Tongue and Groove edges) as manufactured by United States Gypsum Company. (Specify finish; Bone White, Beveled edges painted).

3a-9. CUSTOM PANEL-TILE, a solid surfaced Wood Fiber Tile (½″ thickness x 12″ x 24″, or 16″ x 32″ with Kwik-lok Tongue and Groove edges) as manufactured by United States Gypsum Company. (Specify finish; Bone White, Beveled edges painted).

3b. Gypsum Board shall be:

3b-1. a ½″ (or ⅝″) gypsum board base conforming with Dry-Wall Manufacturers Assoc. specifications for adhesive application of acoustical or decorative wood fiber tile.

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4. APPLICATION AND INSTALLATION

4a. ADHESIVE APPLICATION: (½" Butt Bevel, 12" x 12" QUIETONE Wood Fiber Acoustical Tile).

4a-1. The adhesive shall be of a type manufactured expressly for the purpose shall not be water soluble nor contain ingredients that react chemically with paint, nor contain a solvent that has a stronger solvent action on an oil paint than naphtha; it shall contain no alcohol.

4a-2. Installation Shall Be:
The acoustical units shall be primed with adhesive prior to the application of the 4 spots of adhesive placed near the corners of the tile. The adhesive shall be approximately 2½" in diameter after the tile has been pressed into position on the ceiling. Acoustical units shall be placed so that the face surface of the acoustical ceiling is aligned and level.

4b. ADHESIVE APPLICATION: (½" x 12" x 24" Kwik-lok Tongue and Groove QUIETONE, KLEENTONE, Insulating Twin-Tile, Insulating Panel-Tile, Custom Twin-Tile, or Custom Panel-Tile).

4b-1. Same as 4a-1.

4b-2. Installation Shall Be:
The acoustical units shall be primed with adhesive prior to the application of the 6 spots of adhesive; place 4 spots of adhesive near the corners of the 12" x 24" units and 2 spots near the edges of the tile at the centerline of the 24" dimension. The adhesive shall be approximately 2½" in diameter after the tile has been pressed into position on the ceiling. Acoustical units shall be placed so that the face surface of the acoustical ceiling is aligned and level.

4c. STAPLE APPLICATION (½" thickness 12" x 24" Kwik-lok Tongue and Groove edged, QUIETONE, KLEENTONE, Insulating Twin-Tile, Insulating Panel-Tile, Custom Twin-Tile or Custom Panel-Tile; ½" x 16" x 32" Insulating Twin-Tile, Insulating Panel-Tile, Custom Twin-Tile, Custom Panel-Tile).

4c-1. Accessories Shall be:
Furring Strips—wood (soft white pine), 1" x 3" minimum size (when required). Staples—9/16" long, coated.

4c-2. Installation Shall Be:
Wood turring strips or wood framing shall be installed and level (12" or 16" on center for wood fiber acoustical or decorative tiles when applied at right angles). Furring strips shall be installed parallel to (area axis); or diagonal. The units shall be installed by stapling the advancing tongue edge, of the wood fiber tile, to the wood furring strips or wood framing.

4d. NAIL APPLICATION (½" thickness 12" x 24" Kwik-lok Tongue and Groove edged, QUIETONE, KLEENTONE, Insulating Twin-Tile, Insulating Panel-Tile, Custom Twin-Tile or Custom Panel-Tile; ½" x 16" x 32" Insulating Twin-Tile, Insulating Panel-Tile, Custom Twin-Tile, Custom Panel-Tile).

4d-1. Accessories Shall be:
Furring strips—wood (soft white pine) 1" x 3" minimum size (when necessary). Nails shall be—for ½" wood fiber tiles, use 1⅛" blued lath nails.

4d-2. Installation Shall be:
Wood furring strips or wood framing shall be installed and level (12" or 16" on center for wood fiber acoustical or decorative tiles when applied at right angles). Furring strips shall be installed parallel to (area axis); or diagonal. The units shall be installed by nailing the advancing tongue edge, of the wood fiber tile, to the wood furring strips or wood framing.

4e. SCREW APPLICATION (½" thickness 12" x 24" Kwik-lok Tongue and Groove edge QUIETONE, KLEENTONE, Insulating Twin-Tile, Insulating Panel-Tile, Custom Twin-Tile or Custom Panel-Tile; ½" x 16" x 32" Insulating Twin-Tile; Insulating Panel-Tile, Custom Twin-Tile, Custom Panel-Tile).

4e-1. Accessories Shall be:
Furring Strips—Wood, 1" x 3" minimum size (when necessary).
Gypsum Boards Bases—½" x 4' x 8', 9', 10', 12', or 14' ("V" or square edged SHEETROCK FIRECODE* wallboard, ½" x 2' x 8' BAXBORD* Backing Board, or ½" x 2' x 8 or 4' x 8" USG Asphalt Impregnated Gypsum Sheathing nailed to wood framing. NOTE: Consult your U.S.G. Representative for recommendations in the use of ⅜" or ⅝" Gypsum board when they are desired.
Screws—⅞" long No. 4 flat head screw for ½" wood fiber tiles. Use a 1", No. 4 flat head screw for attachment of ¾" thick tongue and groove wood fiber tiles.

4e-2. Installation Shall be:
Wood furring strips or wood framing shall be installed and level (12" or 16" on center for wood fiber acoustical or decorative tiles when applied at right angles). Furring strips shall be installed parallel to (area axis); or diagonal. The units shall be applied by screw attachment of the advancing tongue edge of the wood fiber tiles, to the wood furring or wood framing. Gypsum Board Bases shall be nailed to wood framing in accord with manufacturers standard nailing recommendations. Spacings for wood furring strips (size or base shall be sufficient to carry gypsum board and tile), wood framing, or special metal nailing channels should not exceed 16" on center when using ½" (square edge) thick gypsum boards or 24" on center when using ½" ("V" edge) thick gypsum board or sheathing base.

RELATED INCLUSIONS

Wood fiber tile may be economically stapled or nailed to wood supports spaced not to exceed 12" or 16" on center for right angle or 45° diagonal application.

Size of Nailing Strips	Maximum Spacing of Supports
1" x 2" or 1" x 3"	24"
2" x 2" or 2" x 3"	36"

Where a suspended ceiling is required, a double grillage is recommended, using as main members (2" x 2") or (2" x 3"), nailing strips spaced as shown above.
Nailing strips (2" x 2") or (2" x 3") will successfully span 48" if a 1" x 2" transverse stiffener strip is nailed to them midway between and parallel to the 48" supports.

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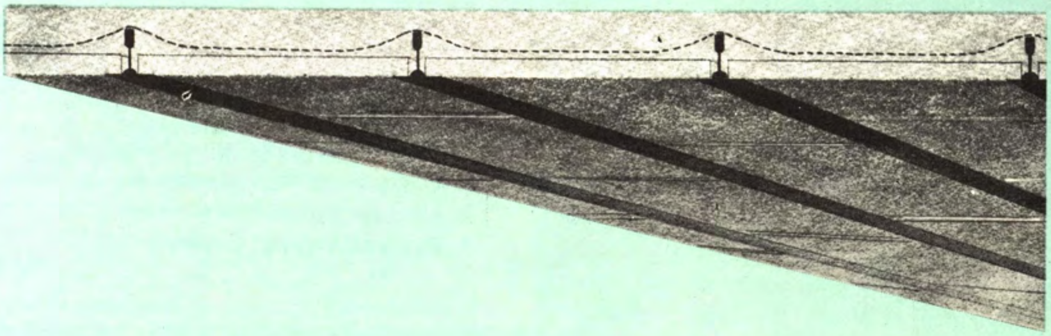
TECHNICAL INFORMATION

PYROFILL* GYPSUM CONCRETE ROOF DECKS



UNITED STATES GYPSUM

1963

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UNITED STATES GYPSUM

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PYROFILL*
GYPSUM ROOF DECKS

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DESCRIPTION

The PYROFILL Roof Deck System is constructed of steel sub-purlins which support permanent formboards for reinforced, poured-in-place PYROFILL Gypsum Concrete.

Its design concept has endured for over 40 years through eminent performance on virtually all types of buildings and maintains several basic differences from poured-in-place concrete roof deckings (either reinforced or light weight):

1. The PYROFILL Gypsum Concrete fill dries down through the formboard.
2. The formboard is a non-structural component and does not require venting clips.
3. The system does not require "curing" to achieve early or ultimate strengths.
4. The reinforced roof fill is a strong diaphragm which is integrated with the roof framing by the welded steel sub-purlins. The combined PYROFILL—sub-purlin action provides strong resistance to both vertical and horizontal forces.
5. United States Gypsum Co. designs and sells both the fill and the formboards. Hence, the roof deck contractor is assured of unit responsibility via quality materials.

United States Gypsum Company manufactures the following products designed for use in the construction of PYROFILL Roof Decks:

1. SHEETROCK* Formboard
2. Plastic Faced SHEETROCK Formboard
3. USG* Insulating Formboards
4. USG Acoustical Formboards
5. PYROFILL Gypsum Concrete

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DESCRIPTION (continued)

Specifications for the selection of these products and the installation of the Pyrofill System are listed on the last page of this folder. United States Gypsum Company also manufactures Thermofill* Gypsum Concrete, which provides insulating and structural values different from the basic System and requires relevant specifications and details. Contact your local United States Gypsum Company Sales Office for details and recommendations regarding the use of Thermofill.

FUNCTION

Pyrofill* Roof Decks can be designed and constructed for any plan or shape of building providing both superior structural values and a monolithic base for the roofing membrane. Pyrofill Decks afford high safety factors for vertical loads and seismic forces while meeting the requirements of most building codes for dead and live loads. For other than extreme loading conditions, the load carrying ability of a Pyrofill Roof Deck is established by the selection of the steel subpurlins and the supporting roof framing members.

Generally, Pyrofill Roof Decks are installed over steel roof framing for flat or near-flat roofs. However, they are adaptable to low-pitched or geometric roof constructions in all forms whether the roof framing is of steel, concrete or wood. **Simplicity of design and the strength** of the Pyrofill System allows complete freedom to both the architect and his structural engineer in designing for roof loads. The System has been tested for up to 125 lbs./sq. ft. resistance to uplift caused by winds; spacings of roof purlins can be anything up to 12′; eight formboards are available for use, singly or in combination, for a variety of job requirements.

FIRE RESISTIVE

Pyrofill Roof Decks supported by protected structural steel are incombustible and fire tests at a national agency have demonstrated one to two hour fire endurance, without a suspended ceiling beneath. Obviously, this ensures greater protection from fire for the roof of the structure and fire insurance rates can be reduced by as much as 30%. (See table below.)

ECONOMY

Pyrofill Roof Decks are always available at low, competitive costs, yet provide the advantages of high strength, fire resistance, quick installation and job control. Savings are possible through elimination of supplementary fireproofing materials, ease of application, lower steel requirements, earlier occupancy and lower fire insurance rates.

EXPERT INSTALLATION

Expert roof deck contractors are available nationally for bidding and constructing Pyrofill Roof Decks (according to specifications) for practically all types of building construction throughout the United States. Their trained mechanics can install as much as 20,000—25,000 square feet of Pyrofill in one day. The quick setting action of Pyrofill (typically—less than 30 minutes) allows the application of the roofing membrane to begin within hours, not days, after pouring because Pyrofill does not require curing to attain structural strength.

PRODUCT DESCRIPTION

PYROFILL Gypsum Concrete is mill-formulated and composed of calcined gypsum and wood chips or shavings. It is mixed with clean water, only, at the job site and poured-in-place over permanent formboards. Pyrofill complies with ASA—A59.1—1954 and A.S.T.M. C 317-55 Standards.

THERMOFILL* Gypsum Concrete is mill formulated and composed of calcined gypsum and graded perlite aggregate. It is mixed with clean water, only, at the job site and poured-in-place over permanent formboards. Thermofill complies with ASA 59.1—54 and A.S.T.M. C 317-55 Standards.

See pages 4 and 5 for complete descriptions of USG Formboards used with Pyrofill Gypsum Roof Decks.

All formboards manufactured by United States Gypsum Company are treated to resist mildew effectively where adequate ventilation is maintained in the adjacent air space.

All formboards manufactured by United States Gypsum Company can be used in concealed or exposed roof decking. The Plastic Faced Sheetrock Formboard does not require painting, where used as the exposed roof deck surface. The other formboards, including those with mill primed finishes, can receive finish coats of paints (for final decoration or to hide water stains) where used as the exposed roof deck surface. See pages 6 and 7 for recommendations for painting all types of USG Formboards used in Pyrofill Roof Decks.

GYPSUM DECK CHARACTERISTICS	Total Deck Thickness	Formboard Thickness	Reinforcing Mesh	Fire Resistance Rating	Source
SHEETROCK	2½″	½″	48-1214 (1)	1-hour	NBS Test #400 Aug.-13, 1958
Plastic Faced SHEETROCK	3″	½″		2-hour	NBS Test #406 Aug.-11, 1959
USG Acoustical	3″	1″	48-1214 or KEYDECK	—	—
USG Insulation	3″	1″		—	—
Asbestos Cement	2½″	¼″		Incombustible	(UL(3)

1. Self furring wire mat, ½″ crimp, in 3″ (total thickness) deck for 2-hour fire rating.
2. Flame spread for such formboards determined by Underwriters' Laboratories, Inc., for the Gypsum Association (Report R-3110 May 25, 55).
3. Tested by Underwrters' Laboratories, Inc., per ASTM E84-50T.

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FORMBOARDS

SHEETROCK* Formboard

SHEETROCK Formboard is a rigid type gypsum board, ½″ thick by 32″ wide (or 48″ wide), and made to specified lengths to fit purlin spacings. Treated to resist mildew effectively where adequate ventilation is provided. *Tested for* 1- *and* 2-*hour fire ratings when used with* 2-*inch or* 2½-*inch thick gypsum slab and exposed bulb tees.*

Uses—*Ideal for almost every roof deck need, concealed or exposed. Economical for warehouses, light manufacturing buildings, schools—in any construction where durability and low cost are desired.*

Plastic Faced SHEETROCK Formboard

Plastic Faced SHEETROCK Formboard is a rigid type gypsum board ½″ thick by 32″ wide, treated to resist mildew, incombustible and predecorated with a white vinyl plastic surface; washable, highly light-reflective and durable; for interior, exposed ceilings or exterior soffits. **Note**—*Available in standard* 8′ *lengths. For information regarding availability of other sizes, contact your U.S.G. representative.*

Uses—*Durable and easy to maintain, this plastic-surfaced formboard is handsome for interior uses—excellent for exterior deck under-surfaces; eave overhangs, open walkways, and other areas exposed to intermittent weather, steam and moisture. Attractive white plastic finish resists dust, may be washed, if necessary; reduces maintenance costs.*

USG* Acoustical Formboard

USG Acoustical Formboard is a rigid type wood fiber insulation board having a *slotted* or *perforated* acoustical surface shop painted white. It is 1″ x 12″ x 24″ in size and is treated to resist mildew effectively where adequate ventilation is provided.

Note—*USG Acoustical Formboard is shop primed white to provide an economical paint base for further decoration necessary to cover possible water staining and surface discoloration. Field painting after the slab is dry should be covered in the Architects' Specification.*

Uses—*Excellent for exposed ceilings in classrooms, offices and wherever built-in acoustical and insulative properties are desired. The result is a major saving under cost of separate acoustical and insulative ceiling treatment.*

USG Insulation Formboards

USG Insulation Formboards are rigid type, natural color wood fiber boards sized 1″ thick, 32″ or 48″ wide, cut to specified lengths to fit purlin spacings. Also available ¾″ thick, 32″ wide, cut to fit purlin spacings. The natural color of Insulation Formboards will vary slightly so field painting is required if a uniform appearance is desired. USG Insulation Formboards are treated to resist mildew effectively where adequate ventilation is provided.

Note—*Mill Primed USG Insulation Formboard is shop primed white to provide an economical paint base for further decoration necessary to cover possible water staining and surface discolorations. Field painting after the slab is dry should be covered in the Architects' Specification.*

Uses—*Unexcelled for concealed interior construction areas that will have suspended ceilings. Provides a wide range of insulative factors to suit your requirements.*

Asbestos Board

Asbestos-cement Formboard is a rigid industrial type asbestos cement board, ¼″ thick, cut to 32″ wide by 48″ long. Supplemental tees are required to support exposed end joints when they are not supported by the sub-structure.

Note—*Asbestos-cement formboard is not manufactured by U.S.G.*

Uses—*This formboard is ideal for use on outdoor eave overhangs, covered walkways and applications above heat-producing machinery.*

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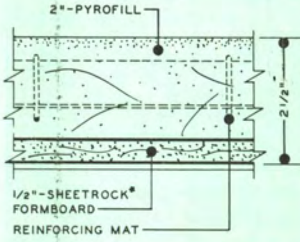
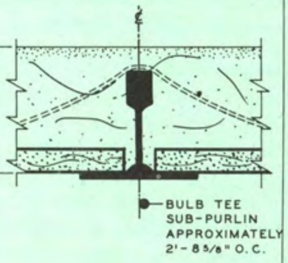
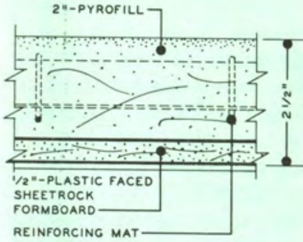
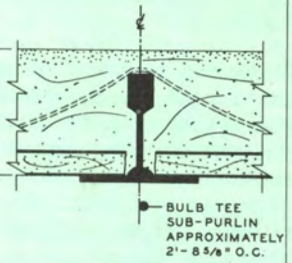
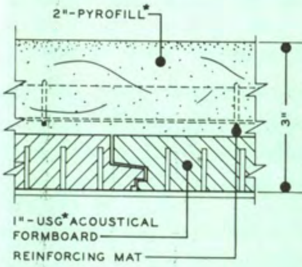
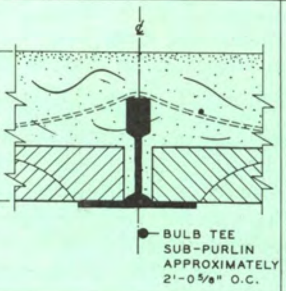
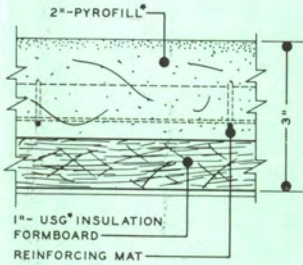
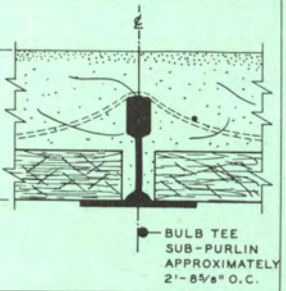
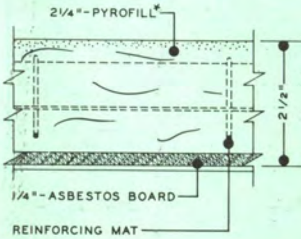
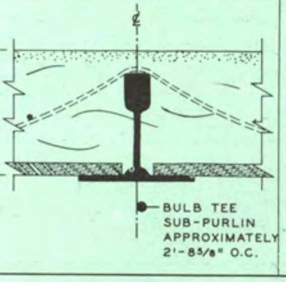
CROSS SECTION LONGITUDINAL	CROSS SECTION TRANSVERSE	THICKNESS (Inches)	WIDTH (Inches)	LENGTH (Feet)	FLAME SPREAD	NOISE REDUCTION COEFFICIENT	LIGHT REFLECTION COEFFICIENT	SPECIFICATION COMPLIANCE
 2"-PYROFILL 2 1/2" 1/2"-SHEETROCK* FORMBOARD REINFORCING MAT		½″	32″ or 48″ (3)	Up to 12′, Max.	15-20 (1)	—	66%	FEDERAL SPECIFICATION SS-W 51-A Type A A.S.T.M. C-317-55 C-26-56
 2"-PYROFILL 2 1/2" 1/2"-PLASTIC FACED SHEETROCK FORMBOARD REINFORCING MAT		½″	32″	8′ Only	20-25 (1)	—	75%	—
 2"-PYROFILL* 3" 1"-USG* ACOUSTICAL FORMBOARD REINFORCING MAT		1″	12″	24″	— (2)	.65	78%	FEDERAL SPECIFICATION SS-A-118b Type II-B Perforated and Type II-C Slotted
 2"-PYROFILL* 3" 1"- USG* INSULATION FORMBOARD REINFORCING MAT		¾″ 1″	32″ Only 32″ and 48″ (3)	Up To 12′ Max.	— (2)	(Plain) .35 (Mill Primed) .25	(Plain) 40% (Mill Primed) 78%	FEDERAL SPECIFICATION LLL-F-00321b A.S.T.M. 208-55 Class-A
 2 1/4"-PYROFILL* 2 1/2" 1/4"-ASBESTOS BOARD REINFORCING MAT		¼″	32″	48″	0	—	40%	FEDERAL SPECIFICATION SS-S-283-A Type U Type F

1. Flame spread ratings determined by Underwriters' Laboratory testing.
2. USG Insulation PYROFILL and USG Acoustical PYROFILL Decks are usually classed as incombustible with a deficiency penalty when combustible formboard is used.
3. 48″ wide formboard may be used with light sub-purlin sections only if main supporting steel is spaced not to exceed 36″ o.c.

*T. M. Reg. U. S. Pat. Off.

PYROFILL*
GYPSUM ROOF DECKS

RECOMMENDATIONS

Expansion and Contraction—PYROFILL Roof Decks, like all roof decks, are subject to expansion and contraction due to temperature changes. Bulb tees welded to steel framing limit slab movement that would exert itself at right angles to the direction of the bulb tees. The following is suggested as a guide:

1. Provide expansion joints in the deck and the roofing wherever they are provided in the main structure.
2. Long narrow buildings should have expansion joints through the deck and the supporting structure spaced not more than 200 ft. apart.
3. Separate wings of "L," "U" and "T" shaped buildings with expansion joints.
4. A mineral fiber filler strip should be installed at all structural roof penetrations and at walls crossing the ends of sub-purlins. See details on pages 10 and 11.

To enable you to resolve specific problems the coefficient of linear expansion of gypsum concrete is .0000085 inch per °F; the coefficient of linear expansion of steel is .0000065 inch per °F. See *Steel Construction*, Manual of the A.I.S.C., for method of calculating expansion of bodies by heat.

Decorating—When decoration is desired, painting should not be done until the slab is thoroughly dry. Before painting, the slab should be checked for dryness throughout its entire thickness. An electric type moisture meter can be used if contacts are driven well into interior of slab. Exposed metal, such as sub-purlin flanges, should be protected with a suitable metal primer before finish coats are applied.

Note—PYROFILL Roof Decks do not generally require further decorating, as the formboards provide a presentable undersurface.

Drying—PYROFILL roof slabs dry out from the underside (through the formboard). Adequate heat and ventilation below the slab are required to permit the escape of this moisture. In buildings without windows or with fixed windows adequate mechanical (forced) ventilation is required to remove all construction moisture. PYROFILL is not recommended as a fill over concrete slabs, steel decks and other decks of low permeability. Consult your USG representative if unusual conditions prevail.

Ventilation should be provided for any plenum or joist space between *all* roof deck and ceiling constructions. The venting of enclosed air spaces should be accomplished by natural or artificial means, both *during* and *after* construction of the building. Such venting accomplished by roof vents or soffit louvers to the outside does not appreciably affect plenum or interior temperatures. Consult the *Heating, Ventilating, Air Conditioning Guide*, latest edition, published by the American Society of Heating, Refrigerating & Air Conditioning Engineers, for data on ventilating attic spaces and locations of vapor barriers.

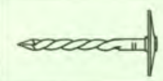
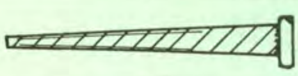
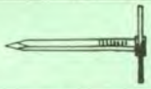
Uplift—During hurricanes or high winds all roof decks are subject to uplift forces. Therefore, roof decks should be anchored to supports to resist this uplift. In developing adequate resistance, the total dead load of the roof deck can be considered as part of the total resistance. In laboratory tests, PYROFILL roof decks, using steel rails or bulb tee sub-purlins welded to the steel framing, have an average uplift resistance equivalent to more than 125 lbs. per sq. ft. Slabs with standard tee or flanged channel (fence post sections) sub-purlins and slabs over bar-joists should have supplemental anchorage to develop the required uplift resistance.

REFERENCE: Armour Research Foundation Test M1068.

Roofing—During application, PYROFILL Roof Decks withstand the effects of normal rainfall, snow, freezing and thawing; however, they should be covered as soon as practicable. The water-proof (built-up type) roof covering should be applied as soon as the top surface of the slab is reasonably dry; i.e., when there is no visible moisture gloss. For the application of built-up roof covering, we recommend that a 43# base sheet, or equal, be nailed for the first ply. We suggest a 5d or 6d square cut nail through a metal roofing cap. See table of nail holding values below.

NAIL HOLDING POWER (see foot notes)

Resistance to direct pull in pounds per nail for penetration shown

Type of nail	Screw-Tite Squarehead (B)	La Belle Square Cut Nails (Wheeling)		Gypsum Deck Nails (A)		Wire Nails
		6-Penny Common	6-Penny Cornice	1½"	1¾"	7-Penny Common
Finish of nail tested	Plain	Plain	Plain	Plain	Plain	Plain
Head dimension	15/16" square	.27"x.21"	.34"x.28"	dia. .975"	dia. .975"	¼" Round
Shank at head	.125"	.19"x.114"	.23"x.14"	.152"x.103"	.197"x.125"	11.5 Ga.
Shank at point	.125"	.10"x.07"	.13"x.08"	.092"x.071"	.125"x.115"	11.5 Ga.
Lengths	1¾"	2"	2"	1½"	1¾"	2¼"
Penetration	1½"	1.75"	1.75"	1.25"	1.50"	2.0"
Holding power in PYROFILL Wet (1 day)	46.5	26.5	34.0	14.5	28.0	—
Dry	62.0	226.0	180.0	116.0	181.0	28.0
Details						

NOTES:

1. Values are from tests conducted at USG Research Laboratories and provide relative holding power for the type of nail shown. (Under conditions described in Notes 2 & 3 below: Selection of nails will depend on the roofing manufacturer's recommendations and spacing of nails.)
2. Nails were driven by hand with a hammer and withdrawn immediately by means of a weighted lever arm.
3. The dry density of the PYROFILL was approximately 52 pounds per cu. ft.
4. Other nails of the same shank size and penetration should give equal holding power.

(A) Manufactured by Crescent Brass & Pin Co., Detroit.

(B) Manufactured by Independent Nail & Packing Co., Bridgewater, Mass.

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*T.M. Reg. U.S. Pat. Off.

LIMITATION OF USE

Formboards should always be stored in a dry place. The normal moisture from a PYROFILL* slab has no effect on the performance of the formboards. Soaking of the formboard prior to the pouring of the slab can result in excessive deflection. The roof covering should be applied as soon as possible after erection to protect the construction from precipitation. Discoloration or staining of the formboard may occur if subjected to prolonged exposure to moisture. If staining will be objectionable, the formboard may be painted; see recommendations below.

Excessive Moisture or Temperature—PYROFILL roof decks are suitable for all types of buildings and occupancy with normal temperature and humidity conditions. Where intermittent very high temperatures occur, it is advisable to use cement-asbestos board PYROFILL roof decks. Where abnormally high humidity conditions prevail, such as in wet process plants, or where unusually high temperatures prevail such as in foundries, over breechings, in furnace rooms, etc., consult your USG representative for recommendations.

Acids—Acid fumes generally are not harmful to gypsum although they may be harmful to framing materials. Where acid fumes are considered a problem, consult your local USG representative.

Heavy Loads—Although the reinforced PYROFILL slab will carry loads in excess of 100 lbs. per sq. ft. with adequate factors of safety, the sub-purlins or bar joists govern the safe load limit. All superimposed concentrated loads, such as flag pole bases, water tanks and ventilating fans, must be directly or indirectly supported on steel framing, not on the gypsum slab.

Steep Roofs—PYROFILL roof slabs are designed to receive built-up roof coverings. On steep roofs, where slate, ceramic tile or rigid type shingle roof coverings are required, the use of USG* METAL EDGE GYPSUM PLANK is recommended. See page 6 for PYROFILL nail holding data.

Suspended Ceilings—Suspended ceilings under PYROFILL roof decks should be hung from the structural steel frame. If they are hung from the roof deck, the hangers should be attached to the sub-purlins, never to the gypsum slab alone. See details page 11. When hung from the sub-purlins, the sub-purlins must be capable of supporting the total weight including ceiling with a deflection not to exceed 1/360 of their span. See selection table on page 9 for load values of various sub-purlins.

PAINTING RECOMMENDATIONS FOR POURED GYPSUM ROOF DECK SYSTEMS

Painting should not be started until the slab and formboard are thoroughly dry.
Metal parts should be protected with a suitable metal primer.

FORMBOARDS	RECOMMENDATIONS
SHEETROCK*	A breather type paint such as TEXOLITE* Alkyd Latex or similar type paint is recommended. The paint may be applied by brushing, rolling or spraying. A fungicide must be added to the paint. With TEXOLITE Alkyd Latex use 1⅛ ounces of Dowicide "G" per ½ gallon of water thinner used. For fungicides in other plants check manufacturer's specific recommendations.
Plastic Faced SHEETROCK	Painting not required. For use in exposed ceiling areas or exterior soffits.
USG Acoustical	A breather type paint such as TEXOLITE Alkyd Latex or similar type paint is recommended. The paint may be applied by brushing, rolling or spraying. A fungicide must be added to the paint. With TEXOLITE use 1⅛ ounces of Dowicide "G" per ½ gallon of water thinner used. For fungicides in other paints check manufacturer's specific recommendations.
USG Insulation	A breather type paint such as TEXOLITE Alkyd Latex or similar type paint is recommended. The paint may be applied by brushing, rolling or spraying. A fungicide must be added to the paint. With TEXOLITE Alkyd Latex use 1⅛ ounces of Dowicide "G" per ½ gallon of water thinner used. For fungicides in other paints check manufacturer's specific recommendations.
Asbestos Cement	Use TEXOLITE Vinyl Exterior paint or similar breather type paint. Apply by brushing, rolling or spraying.

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*T. M. Reg. U. S. Pat. Off.

SUB-PURLIN PROPERTIES
THERMAL INSULATION VALUES

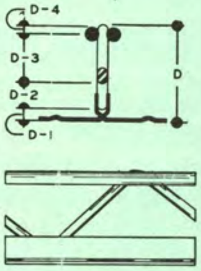
DESIGN

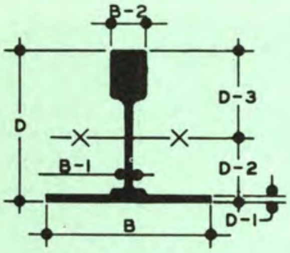
PYROFILL* Decks are comprised of PYROFILL Gypsum Concrete, reinforced, poured over permanent formboards and are designed to span continuously over sub-purlins. Reinforcing mesh for PYROFILL is one of the following types:

1. KEYDECK—A galvanized wire mesh, woven with 16 gauge straight wires and 19 gauge diagonal wires.
2. 48-1214—A galvanized, welded, wire mesh with 12 gauge longitudinal wires at 4″ on centers and 14 gauge transverse wires at 8″ on centers.

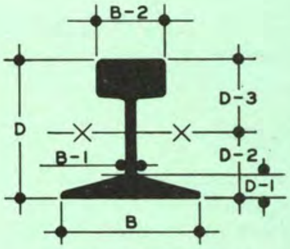
The effective cross-sectional area of reinforcing mesh at right angles to the sub-purlins is .026 sq. in. per lineal foot of slab.

Note—*U.S.G. neither manufactures or sells reinforcing mesh.*





BULB TEE



A.S.C.E. RAIL

DECK WEIGHTS (1)	APPROX. DECK WEIGHT PER SQUARE FOOT
2½″ SHEETROCK PYROFILL Roof Deck (2″ PYROFILL over ½″ SHEETROCK or ½″ Plastic Faced SHEETROCK)	10.7
3″ USG Insulation PYROFILL Roof Deck or 3″ USG Acoustical PYROFILL Roof Deck (2″ PYROFILL over 1″ Wood Fiber Formboard)	10.4
2½″ Asbestos Board PYROFILL Roof Deck (2¼″ PYROFILL over ¼″ Asbestos Board)	12.2
2¾″ USG Insulation PYROFILL Roof Deck (2″ PYROFILL over ¾″ Wood Fiber Formboard)	9.9

(1) Add Sub-purlin weight to deck weight in calculating total dead loads.

SUB-PURLIN—PROPERTIES AND DIMENSIONS

TRUSSED TEE

SIZE	I in.⁴	S BTM	S TOP	D¹	D²	D³	D⁴	2 Wires in.²	1 Wire in.²	2 Angles in.²
5-9-16 D=1¾″	.1123	.1919	.1057	.1694	.4157	1.0614	.1035	.0672	.0173	.1718
4-5-16 D=2″	.1860	.3054	.1454	.1307	.4779	1.2787	.1127	.0797	.0336	.2135
4-5-16 D=2½″	.3025	.4062	.1841	.1307	.6139	1.6427	.1127	.0797	.0336	.2135
1-5-16 D=2″	.2433	.3155	.2238	.1307	.6406	1.0872	.1415	.1258	.0336	.2135
1-5-16 D=2½″	.3999	.4180	.2853	.1307	.8260	1.4018	.1415	.1258	.0336	.2135
0-5-14 D=2″	.2861	.3833	.2601	.1409	.6057	1.1001	.1533	.1476	.0336	.2681
0-5-14 D=2½″	.4723	.5111	.3320	.1409	.7832	1.4226	.1533	.1476	.0336	.2681

(E) Edge Steel Products, Inc.—Olathe, Kansas

ROLLED TEES

TYPE	WT. lbs. LF	WT. lbs. SF	I IN⁴	S IN³	B IN.	B¹ IN.	B² IN.	D IN. (D²&D³)	D¹ IN.	D² IN.	D³ IN.
1½″ Plain T (I)	1.33	0.490	.082	.078	1.500	.125	.125	1.500	.125	.449	1.051
1120 B.T. (C)	1.25	.460	.108	.110	1.5	.100	.375	1.500	.100	.525	.975
158 B.T. (C)	1.40	.513	.173	.171	1.375	.10	.375	1.687	.109	.569	1.010
158 B.T. (I)	1.60	0.540	.170	.172	1.562	.121	.375	1.625	.121	.635	.990
168 B.T. (C)	2.00	0.740	.250	.260	1.625	.109	.453	1.750	.109	.789	.961
168 B.T. (I)	2.00	0.740	.247	.240	1.625	.125	.437	1.750	.132	.722	1.028
178 B.T. (C)	2.50	0.910	.389	.367	1.875	.125	.688	1.875	.125	.816	1.059
178 B.T. (I)	2.50	0.920	.364	.340	1.900	.140	.562	1.875	.140	.805	1.070
200 B.T. (C)	2.90	1.064	.495	.474	2.000	.125	.688	2.000	.125	.955	1.045
200 B.T. (I)	3.00	1.100	.503	.460	2.063	.140	.656	2.000	.140	.908	1.092
218 B.T. (C)	3.00	1.101	.601	.527	2.047	.125	.734	2.125	.125	.985	1.141
218 B.T. (I)	3.00	1.101	.598	.520	2.125	.125	.687	2.125	.140	.975	1.150
228 B.T. (C)	3.65	1.340	.862	.745	2.125	.125	.875	2.312	.125	1.156	1.156
228 B.T. (I)	3.65	1.340	.868	.736	2.063	.125	.875	2.312	.140	1.180	1.132
16-lb. Rail (C)	5.33	1.958	1.240	1.010	2.375	.219	1.172	2.375	.375	1.147	1.228
258 B.T. (C)	4.67	1.720	1.388	1.057	2.250	.141	.937	2.625	.141	1.312	1.312
20-lb. Rail (C)	6.67	2.420	1.940	1.430	2.625	.250	1.344	2.625	.438	1.268	1.357
30-lb. Rail (C)	10.00	3.680	4.060	2.530	3.125	.328	1.687	3.125	.531	1.520	1.605

(I) Inland Steel Company—30 W. Monroe St., Chicago 3, Ill.
(C) Connors Steel Division—H. K. Porter Co., Huntington, W. Va.
Note: All properties shown are taken from data furnished by manufacturers indicated above.

THERMAL INSULATION VALUES

(Btu per sq. ft., per hr., per deg. F. diff. in temperature) "U" Factor for complete roof slab including built-up roof covering (supporting steel not included)

	NO INSULATION (1)		½″ INSULATION (1)		1″ INSULATION (1)		METAL LATH & PLASTER CEILING (2)	
	SUMMER	WINTER	SUMMER	WINTER	SUMMER	WINTER	SUMMER	WINTER
2½″ SHEETROCK PYROFILL ROOF SLAB 2″ PYROFILL Gypsum Concrete Over ½″ SHEETROCK or ½″ Plastic Faced SHEETROCK	0.32	0.36	0.22	0.24	0.17	0.18	0.22	0.25
3″ U.S.G. INSULATION PYROFILL ROOF SLAB 2″ PYROFILL Over 1″ U.S.G. INSULATION FORMBOARD	0.18	0.19	0.14	0.15	0.12	0.13	0.14	0.15
3″ U.S.G. ACOUSTICAL PYROFILL ROOF SLAB 2″ PYROFILL Over 1″ ACOUSTICAL FORMBOARD	0.19	0.20	0.15	0.16	0.12	0.13	0.15	0.16
2½″ Asbestos Board PYROFILL ROOF SLAB 2¼″ PYROFILL Over ¼″ Asbestos Board	0.35	0.40	0.24	0.26	0.18	0.19	0.24	0.26

(1) No ceiling beneath
(2) Suspended ¾″ Plaster ceiling & vented air space, no added insulation.

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*T.M. Reg. U.S. Pat. Off.

Steel Sub-Purlins vary in size, weight and shape and are selected according to required span and loading. They provide anchorage of the deck against uplift, and restrict movement of the deck due to temperature change. Sub-purlins are spaced to accommodate 24″, 32″ or 48″ formboard widths with a slight tolerance for ease of formboard placement. When 48″ wide formboard is used with light sub-purlin sections, supporting steel spacing should not exceed 36″ on center.

Installation—Sub-purlins are spaced approximately 48⅝″, 32⅝″ or 24⅝″ on center and are welded to the structural framing members. Formboards are placed atop the bottom flanges of the sub-purlins. Welded wire reinforcing mesh is laid over the sub-purlins and formboards. PYROFILL Gypsum Concrete, mixed with clean water (only) at the site, is poured and screeded to a uniform 2″ minimum thickness over the formboard.

SUB-PURLINS FOR 2″ PYROFILL SLABS OVER FORMBOARDS

TRUSSED TEE

VALUES SHOWN BELOW are on the basis of the Tee, Mesh, and Gypsum acting as a composite section; from data furnished by Edge Steel Products, Inc.

Type	Weight Pounds Lin. Ft.	SAFE TOTAL LOAD in pounds per sq. ft. deflection less than 1/360 of span.†														Maximum Eaves Overhang
		3′0″	3′6″	4′0″	4′6″	5′0″	5′6″	6′0″	6′6″	7′0″	7′6″	8′0″	8′6″	9′0″	9′6″	
5-9-16 D=1¾″	.90		148	113	89	73	60									1′6″
4-5-16 D=2″	1.16					100	82	69	59	51						1′9″
4-5-16 D=2½″	1.16					127	105	88	75	65						1′9″
1-5-16 D=2″	1.32								74	64	56	49				2′0″
1-5-16 D=2½″	1.32								88	76	66	58				2′0″
0-5-14 D=2″	1.57										72	63	56	50	45	2′3″
0-5-14 D=2½″	1.57										80	70	62	56	50	2′3″

Safe load tables are based on uniformly distributed loads on 3 continuous spans and with Sub-Purlins spaced 32¾″ O.C.
For Sub-Purlins spaced 24¾″ O.C. multiply value by 1.325. The 2½″ Trussed-Tee is recommended when formboard of 1″ thickness is used.
†For tables showing deflections less than 1/240 consult Edge Steel Products, Inc. Technical Folder.

ROLLED TEES

Values shown by heavy black figures are based on properties determined by each sub-purlin manufacturer with fs @ 20,000 psi. Values shown in light black are for fs @ 27,000 psi. Sub-Purlins spaced 2′8⅝″ on center. M=1/10 WL^2 except as noted. Exceptions to spacing and slab thickness are noted in table.

TYPE	TOTAL SAFE UNIFORM LOAD IN LBS. PER SQ. FT.																			Max. Eave Overhang (See Note 7)
	3′0″	3′6″	4′0″	4′6″	5′0″	5′6″	6′0″	6′6″	7′0″	7′6″	8′0″	8′6″	9′0″	9′6″	10′0″	10′6″	11′0″	11′6″	12′0″	
1½″ Plain T (C)	53	39	30											Loads Shown are for Minimum Section Modulus Within Each Group						1′5″
	71	52	38•																	
1120 B.T. (2)	75	55	43	33	26															1′9″
	101	74	58	45	36	30														
158 B.T. (C)	117	87	66	52	42	34	29													2′1″
158 B.T. (I)		117	79•	55•	56	47	35•													
168 B.T. (C)			92	73	59	49	41	34	30											2′6″
168 B.T. (I)			115•	81•	59•	66	51•	39•	32•	35	31									
178 B.T. (C)				104	83	69	58	49	42	37	32	28								3′0″
178 B.T. (I)					90•	93	76	60•	48•	38•	43	38	34	31						
200 B.T. (C)					113	93	78	67	58	50	44	39	35	31						3′6″
200 B.T. (I)					120•	125	104•	82•	65•	53•	44•	52	47	41	37	35	31			
218 B.T. (C) Spacing 2′9″						105	89	75	65	57	50	44	39	35	32					3′9″
218 B.T. (I) Spacing 2′9″						108•	117	98•	77•	62•	51•	44•	52	47	42	38	35	32		
228 B.T. (C) Spacing 2′9″								104	90	80	70	61	56	50	44	41	37	34	31	4′5″
228 B.T. (I) Spacing 2′9″									116•	94•	77•	64•	75	67	60	55	50	45	42	
16-lb. Rail (C) Spacing 2′9″										108	96	84	75	67	61	55	50	46	42	5′2″
258 B.T. (C) Spacing 2′9″-Min. Thickness=3″ Total										115	101	88	80	72	64	58	53	49	45	5′4″
Spacing 2′9″-Min. Thickness=3″ Total													84•	72•	86	79	72	66	60	
20-lb. Rail (C) Spacing 2′9″-Min. Thickness=3″ Total														97	87	79	73	66	61	6′2″
30-lb. Rail (C) Spacing 2′9″-Min. Thickness=3″ Total																	126	116	106	8′3″

1. Loads to left of first heavy black line are less than 1/360. Loads between heavy black lines are over 1/360 but less than 1/240. Loads to right of second black line are over 1/240. Deflection based on $D=\frac{.00684\ Wl^4}{EI}$
2. Loads marked• are limited by deflection and are calculated by U.S.G.
3. To determine total safe load for bending moment of ⅛ Wl $\frac{WL^2}{8}$ use 80% of the tabulated load.
4. To determine total safe load for a maximum fiber stress of 18,000 psi, use 90% of tabulated load shown for 20,000 psi fiber stress.
5. For suspended ceilings use loads shown to the left of the first black line, or 75% of loads shown between black lines can generally be used.
6. For tee spacing of 24⅝″ multiply values shown by 1.327.
7. Values shown are for a total load of 45 pounds per square foot. Bending moment $M=\frac{1}{2}WL^2$ spaced as indicated.
8. Caution must be used in selecting sub-purlins for eave overhangs where heavy wood nailers, angles, gutters or soffits are supported by sub-purlins. Where these conditions are noted, the maximum eave overhang for a given sub-purlin must be checked by calculating the maximum moment developed, since loads applied beyond or at the end of the sub-purlin greatly increase the total moment. Deflection should also be taken into account on overhang designs.

Max. Bending Moment $M=fsS$

Safe uniform load: $W=\frac{2M}{L^2}$ (eave overhang)

Deflection eave overhang (assume uniform loading) $d=\frac{wL^4}{8EI}$

THERMAL INSULATION VALUES

DESCRIPTION	ACOUSTONE* 120 Mineral Acoustical Tile Ceiling (3)		ACOUSTONE "F" Mineral Acoustical Tile Ceiling (3)		Insulating ROCKLATH* Plaster Base On BRACE-TITE* System & Plaster Ceiling (3)		Insulating ⅝″ SHEETROCK* Gypsum Wallboard on DWC Channel System	
	SUMMER	WINTER	SUMMER	WINTER	SUMMER	WINTER	SUMMER	WINTER
2½″ SHEETROCK PYROFILL ROOF SLAB 2″ PYROFILL Gypsum Concrete Over ½″ SHEETROCK or ½″ Plastic Faced SHEETROCK	.09	.14	.16	.17	.11	.19	.11	.18
3″ U.S.G. INSULATION PYROFILL ROOF SLAB 2″ PYROFILL Over 1″ U.S.G. INSULATION FORMBOARD	.08	.11	.12	.12	.09	.13	.09	.12
3″ U.S.G. ACOUSTICAL PYROFILL ROOF SLAB 2″ PYROFILL Over 1″ ACOUSTICAL FORMBOARD	.08	.11	.12	.13	.09	.14	.09	.12
2½″ Asbestos Board PYROFILL ROOF SLAB 2¼″ PYROFILL Over ¼″ Asbestos Board	.09	.15	.17	.18	.13	.20	.11	.18

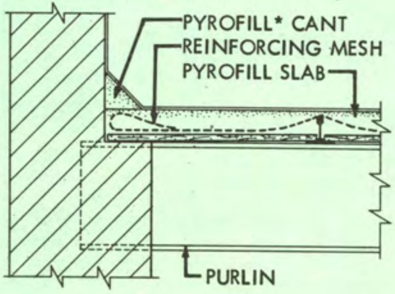
(3) Suspended ceiling and vented space, no added insulation.

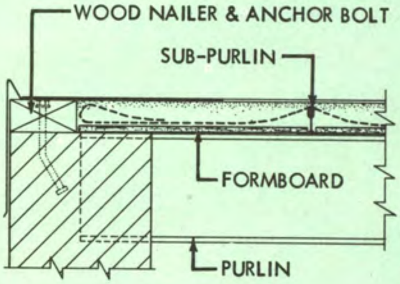
*T. M. Reg. U. S. Pat. Off.

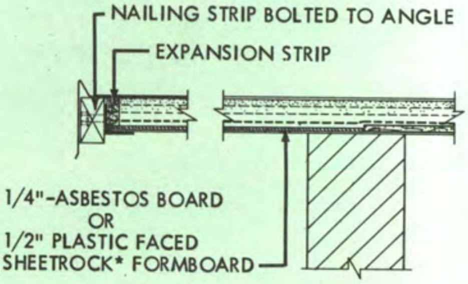
APPLICATION OVER BEAMS AND BAR JOISTS

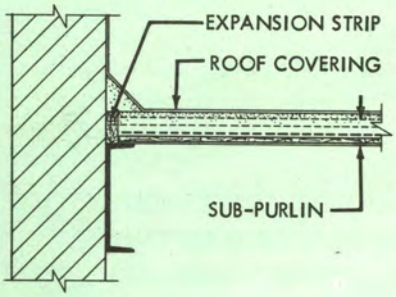
DETAILS | **Scale ¾″ = 1′-0″**

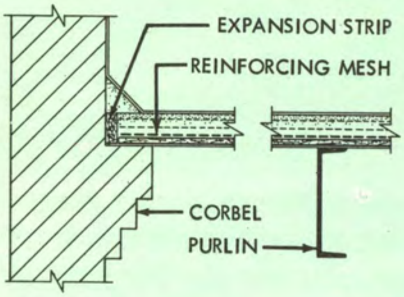
WALL DETAILS

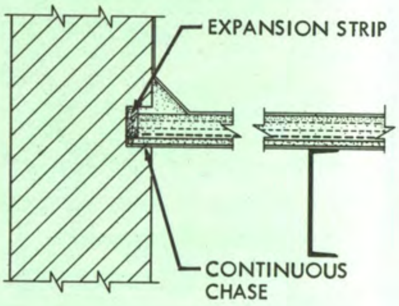




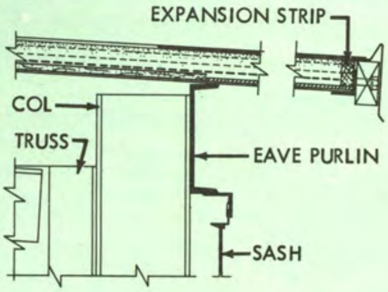


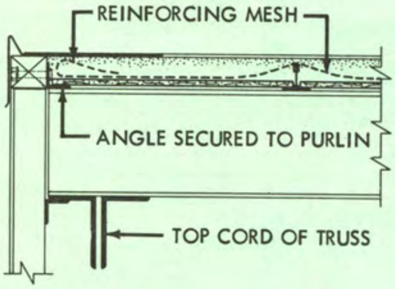


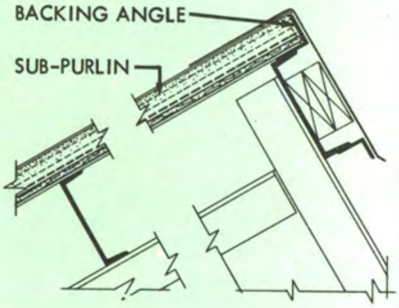




EAVES

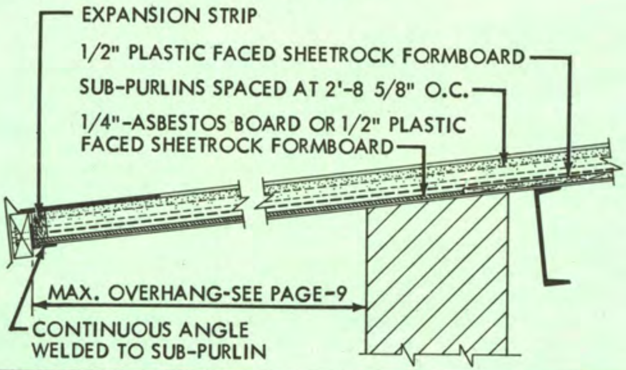


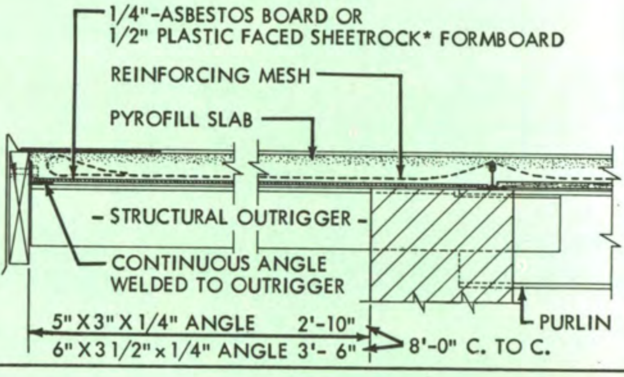




EAVE & GABLE OVERHANG

(OVERHANG BASED ON 45#/□′ TOTAL LOAD)


EXPANSION STRIP
1/2" PLASTIC FACED SHEETROCK FORMBOARD
SUB-PURLINS SPACED AT 2'-8 5/8" O.C.
1/4"-ASBESTOS BOARD OR 1/2" PLASTIC
FACED SHEETROCK FORMBOARD
MAX. OVERHANG-SEE PAGE-9
CONTINUOUS ANGLE
WELDED TO SUB-PURLIN



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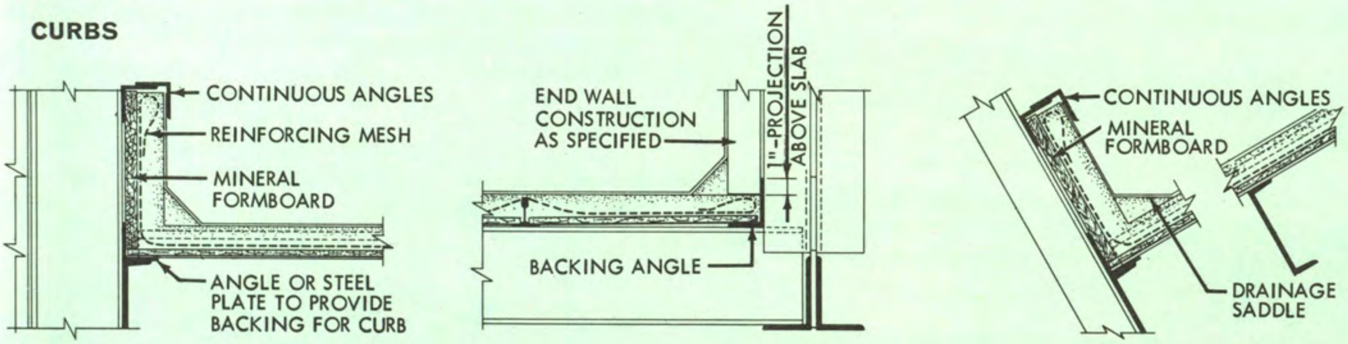
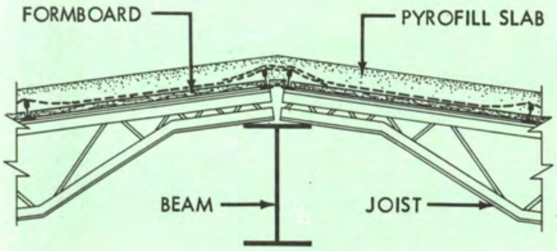
APPLICATION OVER BEAMS AND BAR JOISTS

DETAILS | **Scale ¾″ = 1′-0″**

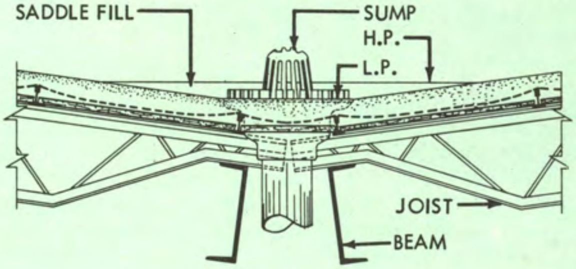
CURBS



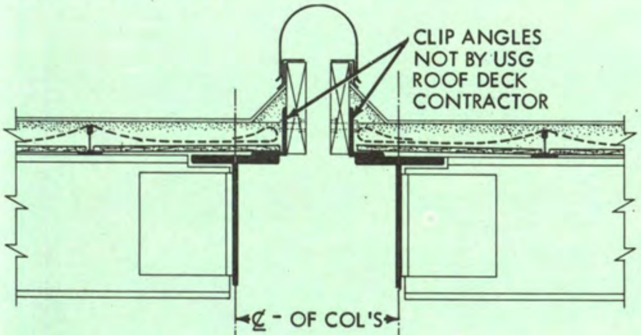
RIDGE DETAIL



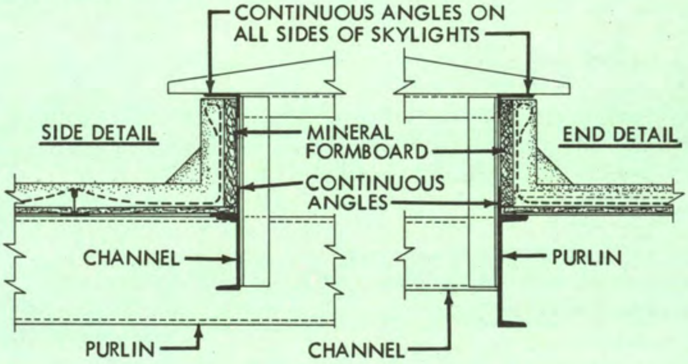
VALLEY DETAIL



EXPANSION JOINT

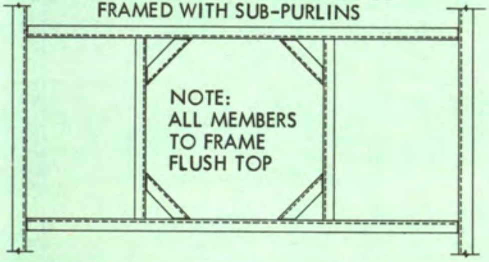


SKYLIGHT DETAIL



TYPICAL FRAMING AROUND OPENINGS LARGER THAN 30″

OPENINGS LESS THAN 30" TO BE FRAMED WITH SUB-PURLINS



NOTE:
ALL MISCELLANEOUS STRUCTURAL STEEL, SUCH AS CHANNELS AND ANGLES, ATTACHED TO ROOF FRAMING ARE NOT BY USG ROOF DECK CONTRACTOR

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*T.M. Reg. U.S. Pat. Off.

SPECIFICATIONS | PYROFILL* GYPSUM ROOF DECKS

I. SCOPE OF WORK—The contractor shall furnish all labor, material and equipment and install completely the poured gypsum roof decks, together with cants, curbs and drainage fills as shown and specified. Approved shop drawings are required before work proceeds.

II. MATERIALS

1. **Steel Sub-Purlins**—Steel sub-purlins shall be an approved type capable of carrying the required dead load and live load, all to be cut to length and shop painted with one coat of an approved paint. All end joints are to bear on roof supports. Stagger the line of end joints.
2. **Formboards**—Permanent formboards shall be (select as required):
   a. USG ½″ treated SHEETROCK* formboard 32″ wide, (for 48″ see page 3: design) in lengths equal to main purlin spacings.
   b. USG Plastic Faced SHEETROCK Formboard ½″ x 32″ x 8′, treated.
   c. 1″ or ¾″ treated USG Insulation Formboard 32″ wide, in lengths equal to main purlin spacings.
   d. USG Acoustical Formboard, 1″ x 12″ x 24″, for sub-purlins spaced 24⅝″ on center.
   e. Asbestos cement board ¼″ x 32″ x 48″.
   f. Galvanized or painted sheet metal tees.
3. **Reinforcing Mesh**—Reinforcement in the poured gypsum slab shall be 48-1214 galvanized, welded wire mesh or KEYDECK galvanized, woven, mesh. The effective cross-sectional area of reinforcing mesh, at right angles to the sub purlins, shall not be less than 0.026 sq in. per sq. ft. of slab width.
4. **Gypsum Concrete**—Gypsum concrete shall be USG PYROFILL consisting of calcined gypsum and wood chips or shavings.

III. INSTALLATION

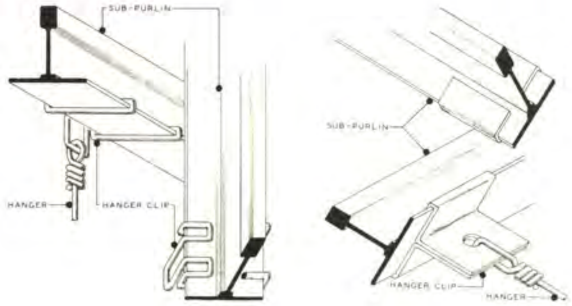
1. **Steel Sub-Purlins**—Place and weld each sub-purlin to main purlins at each contact point, using fillet welds ½″ minimum length placed on alternate sides of sub-purlins where accessible.
2. **Formboards**—Place formboards on sub-purlin flanges with all end or cross-joints supported, forms to fit neatly on all four edges. Cut forms to fit at walls, curbs and openings as required. Install approved sheet metal tees to support end joints of square edged formboards not supported by roof framing.
3. **Reinforcement**—Place 48-1214 reinforcing mesh with the 12 gauge wires at right angles to sub-purlins. If KEYDECK is used, place 16 ga. wires at right angles to sub-purlins. Lap mesh ends at least 6 inches. Do not lap sides of mesh. Cut mesh to fit at wall, curbs and openings, and carry mesh into all areas where PYROFILL is poured.
4. **Gypsum concrete**—Mix PYROFILL with clean water only, as directed on bags. Pour over formboards to minimum depth of 2 inches. Screed all surfaces to a smooth, even plane ready to receive waterproof roof covering specified in another section. Pour cants, curbs and drainage fills as shown or required. After pouring, leave roof deck free and clean for other trades.

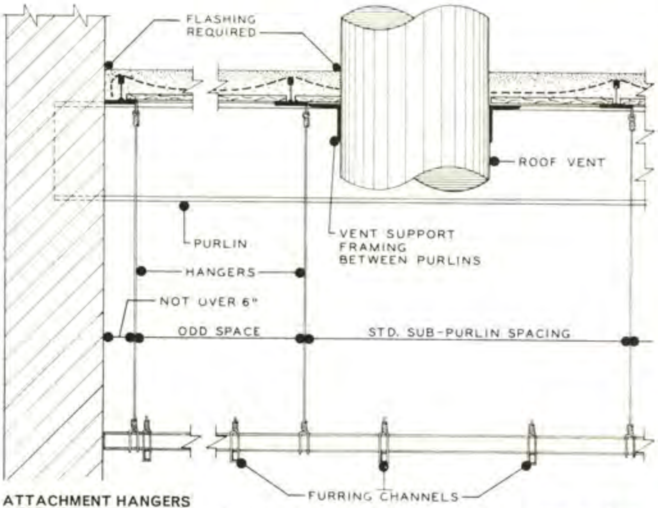
Notes to Architect. Expansion joints should also be provided in the roof deck if they are provided in the main structure.

Where resistance to uplift forces is required, the bulb tee, trussed tee and ASCE type sub-purlins are most effective. Other types may require supplementary anchorage.

Where suspended ceilings are required, USG recommends that they be hung from the main purlins wherever economically feasible. If they are hung from the roof deck, the hangers should be attached to the sub-purlins, never to the gypsum slab itself. The added weight of the suspended ceiling affects sub-purlin size.

HANGER DETAILS

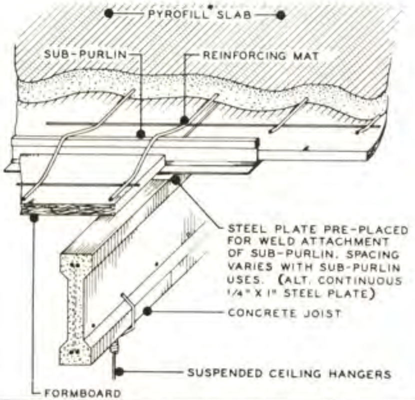




ATTACHMENT HANGERS & CHANNEL GRILLAGE NOT BY USG* ROOF DECK CONTRACTOR

SUSPENDED CEILINGS NO SCALE

PYROFILL DECK ATTACHMENTS TO CONCRETE ROOF JOISTS


PYROFILL* SLAB
SUB-PURLIN
REINFORCING MAT
STEEL PLATE PRE-PLACED FOR WELD ATTACHMENT OF SUB-PURLIN. SPACING VARIES WITH SUB-PURLIN USES. (ALT. CONTINUOUS 1/4" X 1" STEEL PLATE)
CONCRETE JOIST
SUSPENDED CEILING HANGERS
FORMBOARD

*T.M. Reg. U.S. Pat. Off.

UNITED STATES GYPSUM

GENERAL OFFICES: 300 WEST ADAMS STREET, CHICAGO 6, ILL.

A.I.A. File 4-E-6

TECHNICAL INFORMATION

USG® METAL EDGE GYPSUM PLANK

UNITED STATES GYPSUM

1963

UNITED STATES GYPSUM

A.I.A. File 4-E-6

METAL EDGE GYPSUM ROOF PLANK

NAIL HOLDING POWER

(Tests conducted at USG Research Laboratories)

Type of Roofing	Description of Nail	Holding Power Dry Plank— 1½" Penetration
Built Up	1¾" LaBalle Square Cut 1¾" Independent Screw-Tite Square-hed 1½" Galv. Roofing Nail (1¼" Penetration)	150 lbs. 46 lbs. 25 lbs.
Shingles & Tile	Bright Smooth 9 gauge Galvanized Smooth 9 gauge Bronze Smooth Round 9 gauge	107 lbs. 80 lbs. 68 lbs.

THERMAL INSULATION VALUES

"U" Factor for complete roof slab including built-up roof covering (Btu per sq. ft., per hr., per deg. F. diff. in temperature)

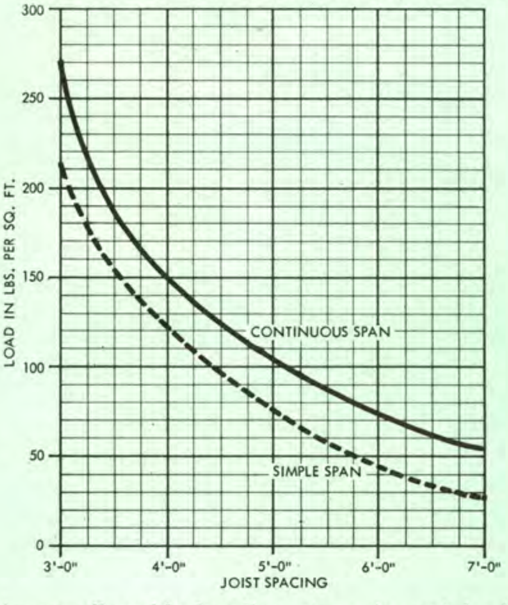
Winter	Summer
Plank without added insulation—0.51 Btu	.43
Plank with ½" added insulation—0.30 Btu	.27
Plank with 1" added insulation—0.21 Btu	.20

Note: The insulation considered is a rigid type wood fiber board (such as USG Roof Deck Insulation) with a "k" factor of .36

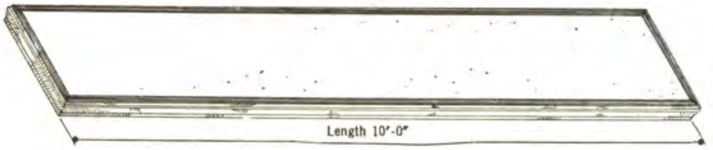
DESIGN PROPERTIES

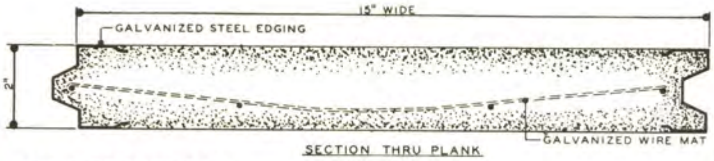
The graph below indicates the allowable uniformly distributed loads that can be superimposed on U.S.G. Metal Edge Plank supported on various joist spacings. No load indicated on the graph will induce deflection greater than 1/240 of the span nor exceed a design stress of 20,000 psi in the metal edging. Load carrying capacities are shown for simple and continuous span conditions.

ALLOWABLE UNIFORM SUPERIMPOSED LOADS



Maximum allowable bending stress in metal edging is 20,000 psi based on simple span bending moment at $wl^2/8$, bending moment for spans greater than 5'0" of $wl^2/8$, and bending moment for spans less than 5'0" of $wl^2/10$. Deflections are limited to 1/240 of the span and based on deflection constants of $0.013\ wl^4/EI$ for simple spans, $0.0068\ wl^4/EI$ for continuous spans less than 5'0", and $0.0054\ wl^4/EI$ for continuous spans of 5'0" and greater. Contact your U. S. Gypsum representative for information on high concentrated loads.





SECTION THRU PLANK

DESCRIPTION

USG Metal Edge Gypsum Plank is a precast structural roof deck unit 2 inches thick, 15 inches wide, and 10 feet long which weighs approximately 10.5 pounds per square foot. Reinforced with 22 gauge galvanized steel tongue and groove edges and a 16 gauge galvanized wire mat, the unit is designed to span a maximum of 7 feet under normal design roof loads. Conforms to Federal Specifications SS-S-439 and ASTM C377-56T.

FUNCTION AND UTILITY

Interlocking Tongue and Groove. The accurately formed interlocking edges mate with adjacent plank, distributing the load. This design permits plank ends to occur off supports, and uniform spacing of roof purlins is therefore unnecessary.

Ease of Erection. The large size and interlocking edges permit easy, fast construction.

Winter Construction. Because the units are precast and laid without grout, winter delays are avoided.

Nailable—The gypsum provides adequate nail holding power for nailing asphalt, asbestos, slate and clay tile shingles. Care should be taken in selecting a nail which will insure as nearly as possible the 1½" maximum recommended penetration into the plank. (See data table on this page.)

Adaptability. USG Metal Edge Plank can be used on flat, pitched, and curved roofs, provided the radius of the curve exceeds 150 feet.

Lateral & Uplift Resistance. Laboratory tests show standard attachment clips are capable of supporting lateral loads up to 2100 pounds per clip. The clip will resist uplift loads of 470 pounds per clip.

RECOMMENDATIONS—LIMITATIONS OF USE

Job Protection. During job storage, gypsum plank should be protected from exposure to rain and snow. Handle and store on edge. Use temporary wood planking over gypsum plank areas exposed to repetitive impact or wheel loads during construction.

Roof Covering. Apply built-up roof covering in accordance with roofing manufacturers' specifications as soon as possible after installation of gypsum plank. The recommended application of roofing to Metal Edge Gypsum Plank is by nailing the first sheet dry using nails providing a minimum penetration of 1¼" (no more than 1½") into the slab. If roofing is mopped on precautions

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should be taken to prevent leakage of pitch or asphalt through joints in the plank. Apply asphalt, asbestos or light slate shingles in accordance with manufacturers recommendations.

A single ply coated base sheet underlayment is recommended.

Excessive Moisture. Gypsum plank roofs are practical for all buildings having normal humidity conditions. Whenever continuous high humidity is anticipated, such as in wet process plants, consult the nearest USG Sales Office for recommendations.

High Temperature. Gypsum plank for roofs or floors perform satisfactorily on buildings exposing them to normal or moderately high temperatures. Where unusually high temperatures are expected, such as in foundries, furnace rooms, over breechings, etc., consult the nearest USG Sales Office for recommendations.

Steep Roofs. Gypsum plank can be used satisfactorily on steeply pitched roofs if precautions are taken to prevent thrust accumulation. See "f" under "erection".

Venting of Enclosed Spaces. All enclosed spaces beneath roof decks should be adequately vented to the outside. Such venting by small louvers or openings does not appreciably affect attic temperatures. Please refer to *Heating, Ventilating, Air Conditioning Guide*, published annually by the American Society of Heating and Air Conditioning Engineers for complete information on venting of attic spaces (Chapters 10 and 12).

SPECIFICATIONS

Scope. Unless otherwise shown on plans, all roof areas shall be covered with gypsum plank, and all curbs, cants, saddles, etc., shall be as shown or specified herein.

Materials. *Gypsum plank* shall be 2″ x 15″ x 10′0″ metal edge gypsum plank, manufactured by United States Gypsum Company.

Clips and nails. The manufacturer of the gypsum plank shall furnish standard galvanized clips for attachment to main purlins, (200 clips per 1000 sq. ft.). Nails (2 per clip) shall be 4d galvanized slaters or 1″ smooth shank No. 11 ga. galvanized roofing nails.

Cants and saddles shall be formed of PYROFILL* gypsum fiber concrete manufactured by United States Gypsum Company.

SPECIAL FORMING

Ridges and Hips. Fill joints at ridges and hips with mortar consisting of USG Gypsum Grouting Cement and sand mixed in the proportion of 1 part cement to 2 parts clean sharp sand by volume.

Cants and Drainage Fills. All curbs, cants, drainage saddles, etc., shall be installed as indicated or required using PYROFILL Gypsum Fiber Cement mixed with clean water only in the proportion of 8 gallons of water to each 80 lb. bag of PYROFILL.

Painting. Plank must be dry before painting with sealing type oil or latex base paints. Galvanized edging must be freed from grease or oil by cleaning with mineral spirits or a similar solvent.

Edging can be painted with a zinc dust metal primer of the type meeting Federal Specification TTP—641—b, dated 1-23-53, Type II.

Seal gypsum surfaces with TEXOLITE* Vinyl Sealer or SHEETROCK* Sealer.

Allow metal primer and Sealer to dry. Apply one or two coats of GRAND PRIZE* or equal latex paint, oil paint, or alkyd flat paint. If it is necessary to paint before plank is dry, prime metal edging as above. Paint edging and gypsum with TEXOLITE* Standard or equal casein paint which has been reinforced by additional fungicide such as 1½ oz. Dowicide "G" per gallon of paste.

ERECTION

Placing of Plank. Start laying plank at one corner of each independent area.

All plank shall be laid dry with marked side up and with the GROOVE side advancing. Plank shall be placed on supporting steel with joints tightly interlocked.

Where no wall supports are provided along the longitudinal edge of the starting and final rows of plank, plank in these rows shall be cut so that end joints occur over roof supports. (When supports are provided along the wall, end joints may occur off the supports.)

End joints in adjacent rows shall be staggered not less than 30 inches. Alternate rows shall be started with full units or cut pieces long enough to have bearing at not less than two supports. End of rows shall be finished similarly. The remaining rows can be started (or finished) with cut plank long enough to have not less than one support. Cut plank to fit at walls, ridges, valleys and around openings as indicated or required.

Anchorage of Plank To Supports. Each plank shall be anchored to supporting members by the following method:

a. Steel Purlins—Use one galvanized clip at every point of support; where span is 3′-6″ or less, use clip on alternate supports. Where possible, alternate position of clips so that each clip is facing in opposite direction to the next one. Secure each clip to plank with 2 nails.

b. Steel Purlins—Weld metal edging of plank to supports by flowing weld from the support to the plank edging being careful not to burn holes in the edging.

c. Concrete Joists—Use power driven studs fired through the plank, 2 studs per plank at each intersection, with penetration into the joist adequate for secure attachment. If steel plates are imbedded in concrete joists use method in (b) above.

d. Wood Joists—Use two 16 penny nails at each intersection of plank with purlin. Drive nails so that their heads are flush with the top surface of the plank.

e. For pitches greater than 30°, standard #91 anchor clip attachment should be employed plus additional anchorage provided by ½″ standard bolts spaced one per 30 square feet of roof area. See detail above.

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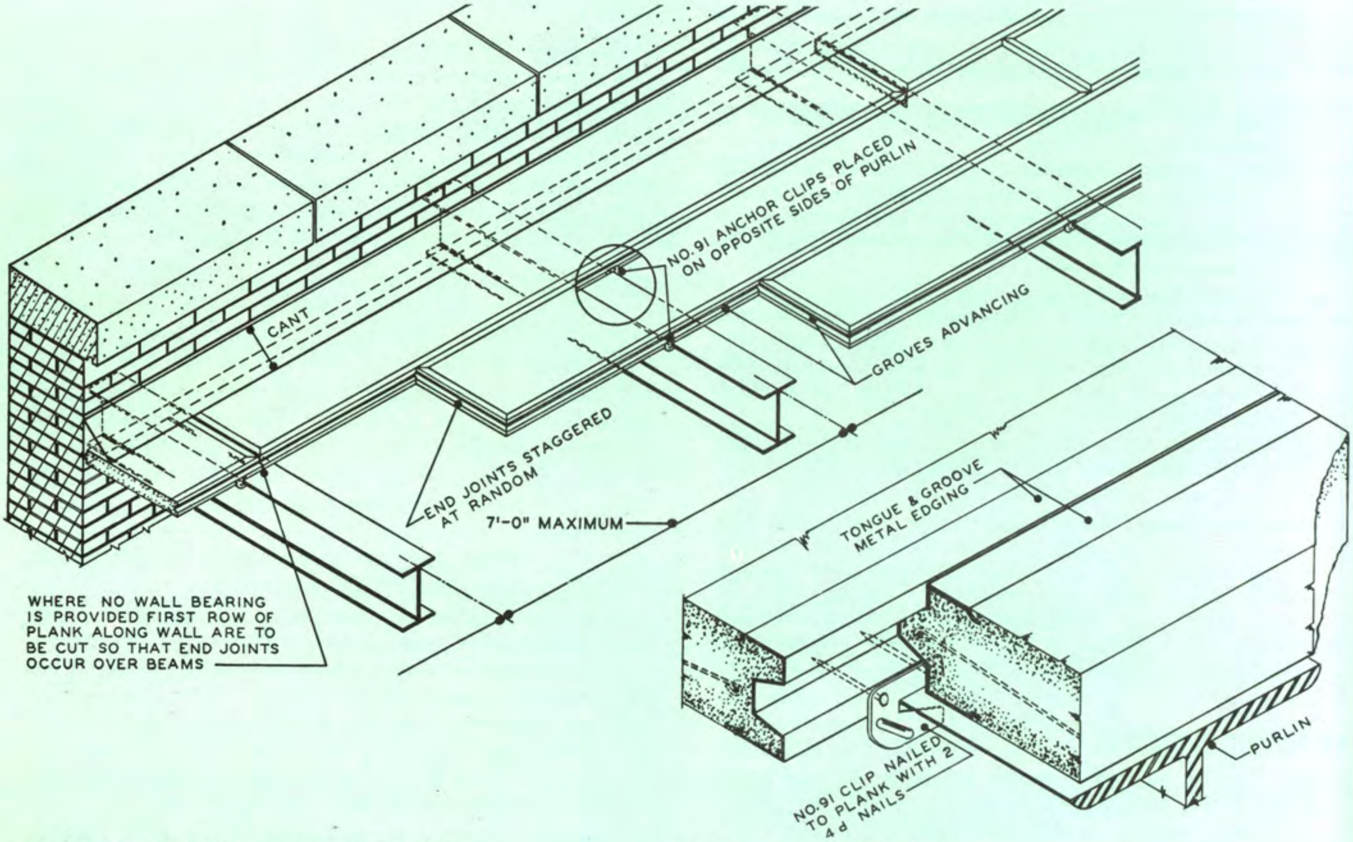
*T.M. Reg. U.S. Pat. Off

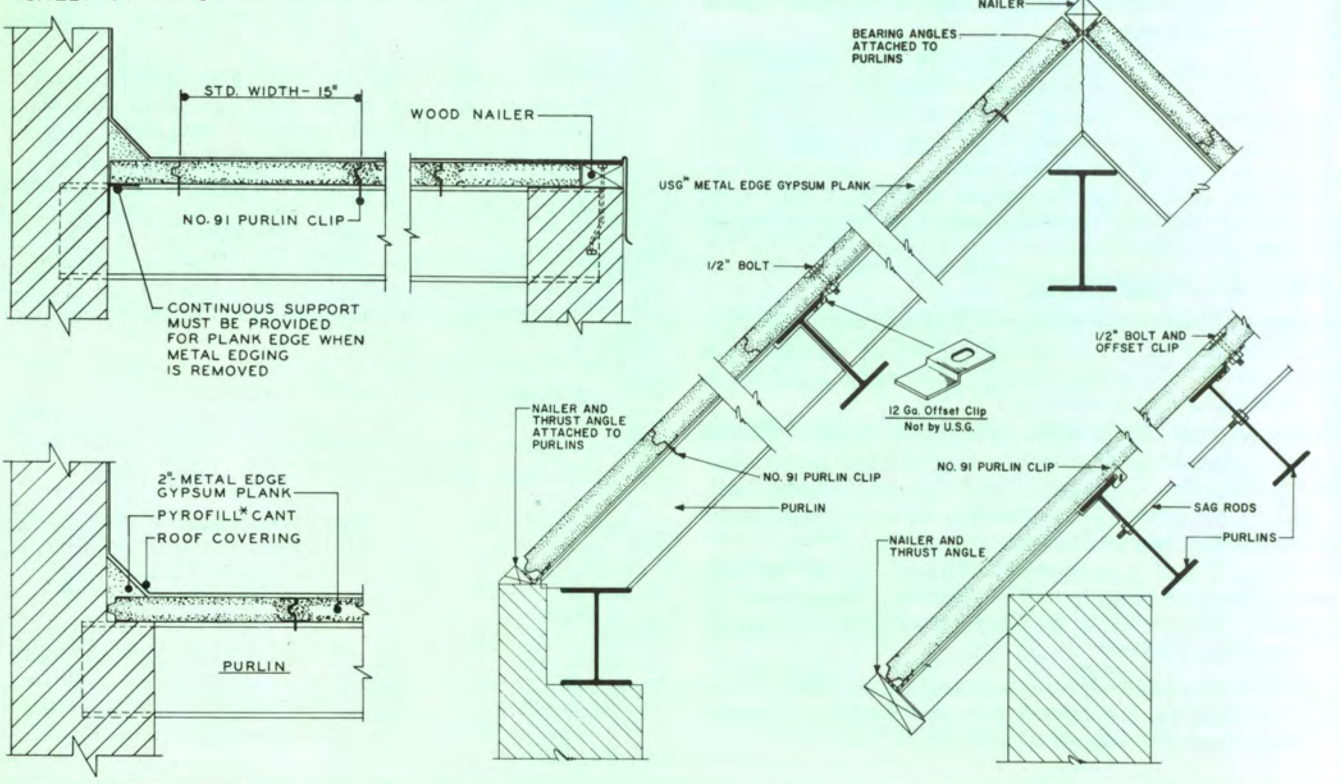
METAL EDGE GYPSUM ROOF PLANK


NO. 91 ANCHOR CLIPS PLACED ON OPPOSITE SIDES OF PURLIN
CANT
GROVES ADVANCING
END JOINTS STAGGERED AT RANDOM
7'-0" MAXIMUM
TONGUE & GROOVE METAL EDGING
WHERE NO WALL BEARING IS PROVIDED FIRST ROW OF PLANK ALONG WALL ARE TO BE CUT SO THAT END JOINTS OCCUR OVER BEAMS
NO.91 CLIP NAILED TO PLANK WITH 2 4d NAILS
PURLIN

PARAPET & END WALL DETAILS

SCALE: 3/4" = 1'-0"

STEEP PITCH DETAILS


STD. WIDTH - 15"
WOOD NAILER
NO. 91 PURLIN CLIP
CONTINUOUS SUPPORT MUST BE PROVIDED FOR PLANK EDGE WHEN METAL EDGING IS REMOVED
2" METAL EDGE GYPSUM PLANK
PYROFILL* CANT
ROOF COVERING
PURLIN
NAILER
BEARING ANGLES ATTACHED TO PURLINS
USG* METAL EDGE GYPSUM PLANK
1/2" BOLT
12 Ga. Offset Clip Not by U.S.G.
1/2" BOLT AND OFFSET CLIP
NAILER AND THRUST ANGLE ATTACHED TO PURLINS
NO. 91 PURLIN CLIP
PURLIN
NO. 91 PURLIN CLIP
SAG RODS
PURLINS
NAILER AND THRUST ANGLE

AIA FILE 12-C
4-L
13-C

TECHNICAL INFORMATION

USG®
STEEL ROOF DECK

UNITED STATES GYPSUM

1962

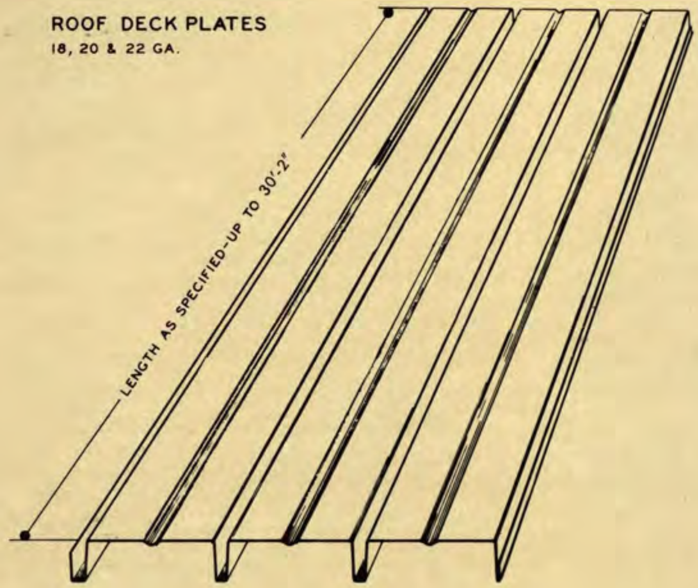
USG® UNITED STATES GYPSUM

AIA FILE 12-C
4-L
13-C

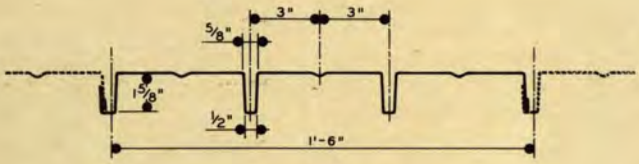
USG
STEEL ROOF DECK

METAL
ROOF DECK
—mrdti—
TECHNICAL
INSTITUTE

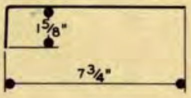
Member



STANDARD STEEL
ROOF DECK PLATE



TYPICAL CROSS SECTION
THRU ROOF DECK PLATE



FILLER PLATE

DESCRIPTION

USG Steel Roof Decks are prefabricated units, formed by cold rolling low carbon steel sheets into ribbed type interlocking panels, ready for installation as they come to the job. USG Steel Roof Deck, ribbed panels, are made 18 inches wide, with nominally 1½" deep ribs, and in standard lengths from 5'8" to 30'–2" inclusive, in ½" increments. Each roof deck panel is shop painted light-tone gray by spray coating with a baked on rust inhibitive paint.

USG Steel Roof Deck panels are available in No. 18, No. 20 or No. 22 U. S. Standard gauges shop painted or galvanized.

All essential accessories such as ridge and valley plates, cover plates, cants, curbs, sump pans or plates are also available in the same shop painted or galvanized steel as shown in detailed drawings.

USG Steel Roof Deck is manufactured in accordance with the Standards and Specifications of the Metal Roof Deck Technical Institute.

FUNCTION AND UTILITY

Light Weight: USG No. 18 gauge painted steel roof deck, ribbed panels, weigh approximately 309 pounds per 100 sq. ft. of roof area, No. 20 gauge approximately 230 pounds, and No. 22 gauge approximately 196 pounds—galvanized slightly more. This light dead load permits savings in the structural steel framing.

Strength: All of the high strength of steel is used to advantage in the ribbed design of USG Steel Roof Decks. A stiffening bead is formed in the top flange between the ribs to resist warping or buckling under concentrated loads.

A table of safe total loads in pounds per sq. ft., the weight per square, the moment of inertia (I''^4), the section modulus (S''^3) and the insulation values, "U" for the complete roof including built up roof covering, is shown in the Technical Data on the opposite page.

Fire Resistance: USG Steel Roof Decks cannot burn or otherwise support combustion. For fire resistance ratings, see page three.

Durability: USG Steel Roof Decks are painted with a prime coat of rust inhibitive Gray Green paint, baked on to give high resistance to moisture and provide additional safety against damaging rust and corrosion.

Adaptability: USG Steel Roof Decks are ideal on flat, warped and low pitched roofs. Insulation and built-up roof coverings are required.

Appearance: The painted surfaces of the deck plates and accessories, and the repeating rib pattern can provide a pleasing light reflective undersurface.

Maintenance: The prime coat gives a tough hard surface which can be washed or repainted as maintenance requires.

Low Cost: Material costs are low. Speed of erection results in low labor costs. Light dead load conserves structural steel.

LIMITATIONS OF USE

Insulation: A rigid type of insulation is required over steel roof decks under the built-up roof covering.

Acid Fumes, Excessive Temperature and Moisture Conditions: Special consideration must be given before using steel roof decks when they are exposed to:

1. Acid or acid fumes detrimental to paint or steel.
2. Excessive temperature.
3. Excessive moisture or humidity conditions.

For further information consult our nearest Industrial Sales Engineer or Architect Service Representative.

Venting of Enclosed Spaces: All enclosed spaces beneath roof decks should be adequately vented to the outside. Such venting by small louvers or openings does not appreciably effect attic temperatures. Please refer to *Heating, Ventilating, Air Conditioning Guide*, published annually by the American Society of Heating and Air Conditioning Engineers for information on venting of attic spaces. (Chapters 10 & 12).

Cantilever for Rakes and Eaves: Where maximum unsupported overhang for USG Steel Roof Deck exceeds 18", consult the nearest U.S.G. Sales Office for recommendations.

TECHNICAL DATA

Type of Span	GA.	SAFE TOTAL LOADS IN LBS. PER SQ. FT. — PURLIN SPACING 5′0″	5′6″	6′0″	6′6″	7′0″	7′6″	8′0″	8′6″	9′0″	9′6″	10′0″
Continuous	18	154	126	106	95	78	68	59	53	47	42	37
	20	114	94	79	67	58	51	44	39	35	31	27
	22	98	81	68	58	50	42	38	33	30	27	
Two Span	18	125	103	87	74	63	55	48	43	38	34	31
	20	92	76	63	54	46	40	35	31	28		
	22	78	64	54	46	40	34	30	27			
Simple	18	125	103	87	74	61	51	43	37	32	28	
	20	92	76	63	53	44	37	31	27			
	22	78	64	54	45	37	31	27				

PROPERTIES

Type	Wt. Lbs. Per Sq. Black	Wt. Lbs. Per Sq. Galv.	I''^4	S''^3
18	309	345	.285	.235
20	230	265	.197	.171
22	196	225	.162	.147

Insulation—"U" Value

Btu/hr./s′f/°F Diff.—INCLUDING ROOFING

None	½″†	1″†	1½″†
0.90	0.39	0.24	0.18

†Fiberboard Insul—K = .33 over steel deck

NOTE: None of these loads will produce a stress greater than 20,000 psi or a deflection due to live load greater than 1/240 of the span. A 6 psf dead load representing the weight of the deck, insulation, roofing, etc., was subtracted from total loads when determining deflections. Safe load determinations are in accordance with AISC Specification for the Design of Light Gage Cold Formed Steel Structural Members (1960 Edition). A moment coefficient of 1/10 has been used for 3 or more spans, and ⅛ for two spans and simple span.

FIRE-RESISTANCE RATINGS—STEEL ROOF DECK CONSTRUCTION

Roof Materials Applied Over Steel Roof Deck	Suspended Ceilings of Metal Lath & Plaster	Rire Resistance Ratings	Authority
(a) 2″ Vermiculite concrete (or equivalent)	1″ Vermiculite—gypsum plaster on metal or wire lath	4 hrs.	National Bureau Standards Test No. 60, 1/31/49 Report No. TR 10235-2FP 2688
(b) Minimum 1¾″ insulation board of shredded wood, bonded with portland cement	1″ Vermiculite—gypsum plaster on metal or wire lath	3½ hrs.	
(c) Minimum 1″ insulation as described in item (b) above	1″ Vermiculite—gypsum plaster on metal or wire lath	3 hrs.	
(d) Minimum 1″ insulation board of felted glass fiber	1″ Vermiculite—gypsum plaster on metal or wire lath	2 hrs.	
(e) Minimum 1½″ wood fiber board insulation	1″ sanded gypsum plaster 1:2 mix	2 hrs.	N.B.S. Test No. 58 11/29/46
(f) Minimum 1½″ wood fiber and cement binder insulation	⅞″ sanded gypsum plaster 1:2 mix	2 hrs.	N.B.S. Test No. 56 11/27/45
(g) Minimum 1″ wood fiber board insulation	¾″ sanded gypsum plaster 1:2, 1:3 mix	1½ hrs.	N.B.S. Test No. 57 1/15/46

ARCHITECTURAL SPECIFICATIONS

General—All principal roof framing, including trusses, purlins, beams, framing around openings larger than 12″ in diameter, and all trimming at curbs, sills, and walls, will be done by others. See Specifications for Structural Steel.

SCOPE

Unless otherwise specified, all roof areas are to be covered with USG Steel Roof Deck. All deck is to be left complete, ready for application of the roof insulation and built-up roofing.

MATERIALS

Roof Deck Plates—Shall be of (No. 18) (No. 20) (No. 22) gauge steel having nominal 1½″ deep ribs, 6″ on centers, and made in units 18″ wide by lengths to fit purlin spaces and shall be manufactured by United States Gypsum Company.

Accessories—All cant strips, ridge and valley plates, utility angles and cover plates, etc., as indicated, shall be 20 gauge, unless otherwise specified, steel fabricated to sizes and shapes indicated and shall be manufactured by United States Gypsum Company.

Curbs—Shall be of No. 18 gauge steel, unless otherwise specified, (Roof Deck Plates) (Sheets formed to sizes and shapes indicated).

Optional—Sump Plates where indicated shall be fabricated of 14 gauge steel sheets according to manufacturers' standards.

Paint—All USG Steel Roof Deck plates and sheet metal accessories, etc., are to have one shop coat of rust inhibitive paint, applied at the factory and oven baked to protect the steel during shipment.

ERECTION

All USG Steel Roof Deck plates and accessories are to be installed by welding in accordance with directions and placing diagrams furnished by the manufacturer, or steel deck contractor.

Optional—For use of clips in lieu of welding:

All USG Steel Roof Deck plates and accessories shall be installed with clips in accordance with directions and placing diagrams furnished by the manufacturer, or steel deck contractor.

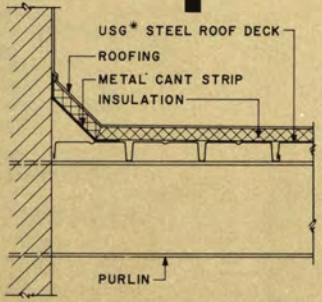
Notes to Architect:

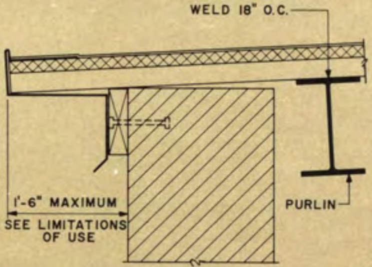
1. When USG Steel Roof Deck is installed by welding, it may also be advisable to use spacer wedges. When pitch of roof is 3″ in 12″ or greater, anchorage clips for insulation are recommended.

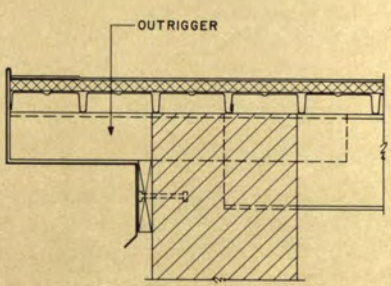
2. Galvanized steel decks (unpainted) No. 18, 20, or 22 gauge are available on specification.

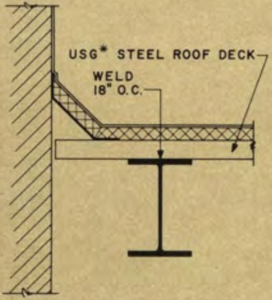
USG
STEEL ROOF DECK

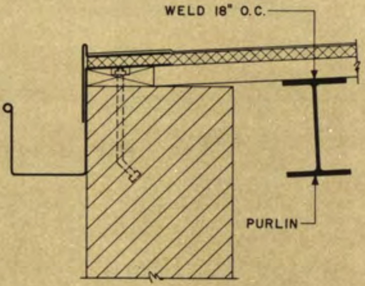
WALL DETAILS | Scale ¾″ = 1′-0″

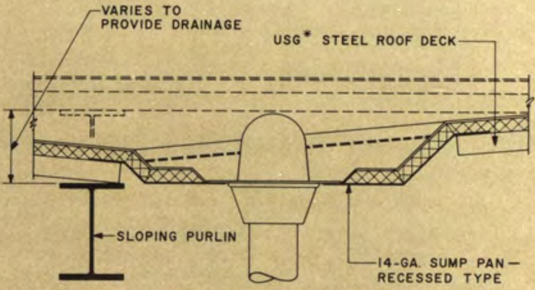






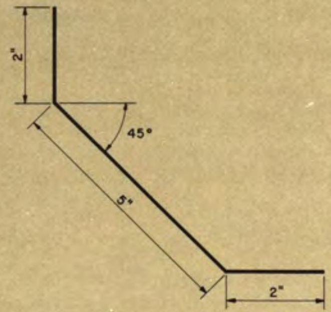




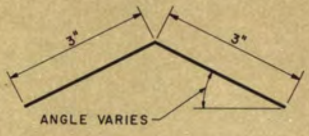


ROOF SUMP DETAIL

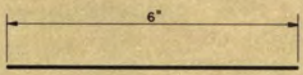
ACCESSORIES
MAX. FAB. LENGTH 10'-0"



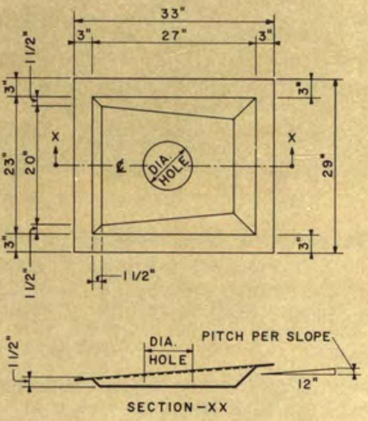
METAL CANT STRIP
20-GA.



RIDGE OR VALLEY PLATE
20-GA.

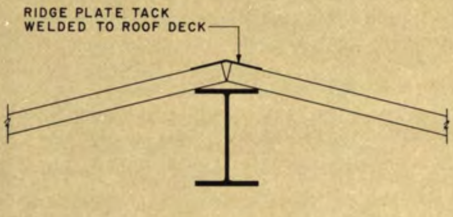


COVER PLATE
20-GA.

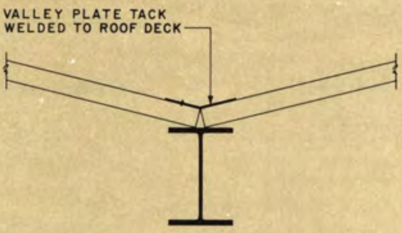


SUMP PAN-RECESS TYPE
14-GA.

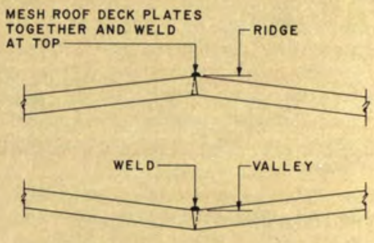
MISCELLANEOUS DETAILS



RIDGE DETAIL



VALLEY DETAIL



RIDGE & VALLEY DETAILS
WHERE SLOPE IS LESS THAN 1" PER 1'-0"

*T.M. Reg. U.S. Pat. Off.

UNITED STATES GYPSUM

GENERAL OFFICES: 300 WEST ADAMS STREET, CHICAGO 6, ILL.

AIA File 3-C

TECHNICAL INFORMATION

LIME

FOR MASONRY MORTAR

UNITED STATES GYPSUM

1961

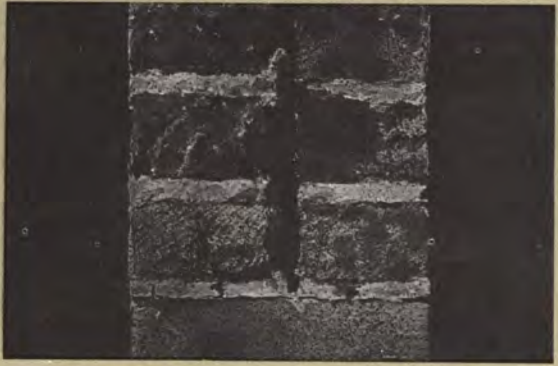
UNITED
STATES
GYPSUM

AIA File 3-C

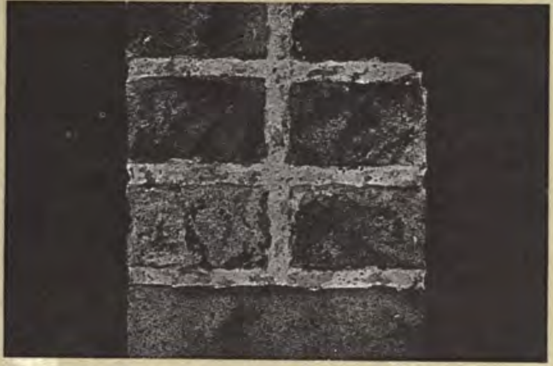
LIME FOR MASONRY MORTAR

A good mortar spreads easily and resists suction of brick.

A plastic mortar flows with light pressure and encourages good workmanship.



Harsh mortar is conducive to poor workmanship and unfilled joints.



Good mortar encourages good workmanship and well filled joints.

BASIC REQUIREMENTS OF SOUND MASONRY CONSTRUCTION

Good masonry walls are expected to be water and weather resistant and durable with a minimum of maintenance. The essential factors in obtaining such results are:

Sound Masonry Units

With moderate rate of water absorption (suction) and good dimensional stability.

Proper Workmanship

Full and properly tooled joints. Proper workmanship is attainable only with a high quality mortar.

High Quality Mortar

With highly plastic working qualities to insure proper filling of all joints, with high water retention to insure strong and complete bond, with adequate strength, elasticity, weather resistance and with low volume change.

FUNCTIONS OF LIME IN MASONRY MORTAR

High Plasticity

Highly plastic limes impart smooth working qualities to masonry mortar, resulting in more complete filling of joints, more intimate contact and better "keying" between mortar and masonry units, and superior mortar bond. Plasticity is measured by the Emley Plasticimeter.

High Water Retentivity

The lime content of masonry mortar increases water retentivity, which means better mortar bond as well as less retempering of mortar during use.

Strong and Complete Bond

The superior mortar bond of a high quality lime mortar reduces the possibility of leaky walls and efflorescence.

Adequate Strength

An ideal mortar possesses sufficient compressive and tensile strength to insure structural integrity of the wall, without being so strong that it becomes rigid and brittle. The National Bureau of Standards sets the limits for desirable mortar compressive strength between 750 and 1000 p.s.i. after 28 days. (N.B.S. Circular No. 30). Lime mortars possess adequate strengths to meet all normal building requirements. (See Technical Data, page 4.)

Elasticity

High lime mortars show far greater elasticity than brittle mortars that are excessively strong and hard. Thus, high lime mortars show superior crack resistance when walls are deflected by lateral (wind) pressures.

Weather Resistance

The characteristics of highlime mortars enumerated above, all of which result in a more complete and permanent contact between the mortar and the masonry unit, insure tight mortar joints. This prevents the penetration of water and its disruptive effects. Lime mortars also demonstrate "autogenous healing", due to the properties of the lime, which enables lime mortar to "reknit" itself to fill voids or small cracks. Wetting and drying cycles accelerate the gain in strength of lime mortars which continues for a period of years.

ECONOMIES OF LIME MORTARS

(a) Mortars having the above characteristics are conductive to rapid, easy, economical, and neat workmanship.
(b) Minimum droppings—Minimum mortar waste.
(c) Low maintenance cost.
(d) Lime mortars, because of their high volume and excellent sand-carrying capacity, are the most economical from the standpoint of material cost.

"MORTASEAL"* and "RED TOP"* are registered trademarks owned by United States Gypsum and are used by it to distinguish its products. "MORTASEAL" identifies the particular hydrated lime; "RED TOP" identifies the particular hydrate or high calcium quicklime and other building products manufactured only by United States Gypsum.

MORTASEAL* LIME

DESCRIPTION

MORTASEAL (Genoa, Ohio Mill) is a double hydrated Ohio dolomitic lime, and MORTASEAL (Farnams, Mass. Mill) is a quick-soaking, hydrated, high calcium lime (both less than 8 per cent unhydrated oxides). They meet the following specifications: A.S.T.M. C207, Type S; Federal Specification SS-L-351, Type M, including the added requirement of not more than 8% unhydrated oxides; National Lime Association Type S.

FUNCTION AND UTILITY

MORTASEAL lime qualifies most readily with all "Functions of Lime in Masonry Mortar" described on preceding page as follows:

Plasticity—MORTASEAL develops exceptional plasticity and workability immediately upon mixing with water—either by machine or by hand. This permits a mortar of exceptional working qualities that is conducive to good workmanship and water resistant joints.

High Water Retentivity—Mortar mixes of 1:2½:9 with MORTASEAL lime, as shown in data table, produced the unusually high "flow after suction" (water retentivity) of 93 per cent."

(a) Exhibits superior working qualities regardless of high or uneven suction.

(b) Conducive to a more complete, strong, uniform bond with masonry units.

(c) Decreases need for retempering.

Low Volume Change—Because of the 92 per cent hydration of MORTASEAL, volume change due to unhydrated material is negligible.

Ease of Mixing—MORTASEAL lime requires no soaking or slaking; it is ready for use immediately after mixing with water.

Adequate Strength: A 1:2½:9 mix of Portland cement, MORTASEAL and sand complies with A.S.T.M. strength requirements for Type N mortar (750 pounds per square inch at 28 days). See Data page 4.

Lower in Cost because:

(a) No soaking or slaking required.
(b) High sand-carrying capacity.
(c) Minimum labor required to mix or apply.
(d) Less need to retemper.
(e) Less need to wet masonry units.
(f) A 1:2½:9 MORTASEAL mix is one of the lowest cost mortars.

AVAILABILITY

Available east of the Rocky Mountains.

LIMITATIONS OF USE

None.

RED TOP* MASONS HYDRATED LIME

DESCRIPTION

A normal hydrated lime, either dolomitic or high calcium, for use in masonry mortar. Complies with A.S.T.M. C207, Type N; Federal Specification SS-L-351, Type M; National Lime Association, Type N.

FUNCTION AND UTILITY

Plasticity—Properly soaked Masons Hydrated Lime has a sufficiently high plasticity to impart excellent working qualities to masonry mortar."

Water Retentivity—"Flow after suction" with a 1:1¼:6 and 1:2½:9 mix exceeds 70 per cent, the minimum requirement of ASTM specifications, which insures that the mortar will have excellent bonding characteristics and will adequately resist high or uneven suction in the masonry units.

Low Volume Change.

Adequate Strength.

AVAILABILITY

Nationwide.

LIMITATIONS

1. Must be soaked at least 16 hours to develop a satisfactory plasticity and the required degree of hydration.

RED TOP* MASONRY QUICKLIME

DESCRIPTION

RED TOP Masonry Quicklime is manufactured in pulverized form. Complies with A.S.T.M. C5 and Federal Specification SS-Q-351.

FUNCTION AND UTILITY

Properly slaked and aged, RED TOP Masonry Quicklime develops into a putty which imparts the desired characteristics to masonry mortar to a high degree.

Plasticity—Generally this product in a mortar exhibits the highest plasticity and easiest working qualities of the three types of lime.

Water Retentivity—A 1:2½:9 mix shows "flow after suction" of 89 per cent.

Low Volume Change.

Adequate Strength.

High Yield—Produces over 50 per cent more putty volume than hydrated limes.

LIMITATIONS

1. For best results, quicklime must be of recent manufacture to avoid air slaking in container.

2. Must be handled carefully to avoid burning.

3. Must be properly slaked and aged at least 16 hours, or until the putty cools to 80° F.

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*T.M. Reg. U.S. Pat. Off.

LIME FOR MASONRY MORTAR

TECHNICAL DATA

REQUIREMENTS OF ASTM C270						AVERAGE TEST RESULTS USING USG LIMES						
Mortar Types	Property Specifications		Proportion Specification			Job Mixes on Volume Basis	MORTASEAL		Red Top Masons Hydrate		Red Top Masons Quicklimes	
	Minimum Aver. Comp. Strength psi 28 Days	Flow After Suction Percent Minimum	Portland Cement (1)	Lime (2)	Sand (3)		Compressive Strength psi (4)	% Flow After (4) Suction	Compressive Strength psi (4)	% Flow After (4) Suction	Compressive Strength psi (4)	% Flow After (4) Suction
M	2500	70	1	¼	2.8 to 3¾	1:¼:3¾	4924	69.0	4277	62.8	Not Tested	66.7
S	1800	70	1	¼ to ½	2.8 to 4½	1:½:4½	3154	70.4	← Not Tested →			
N	750	70	1	½ to 1¼	3.4 to 6¾	1:1¼:6	2150	80.6	1953	77.2	1420	87.5
						1:1¼:6¾	1750	78.0	← Not Tested →			
O	350	70	1	1¼ to 2½	5.1 to 10½	1:2½:9	916	93.3	853	85.6	550	89.0
						1:2½:10½	663	78.0	← Not Tested →			
K	75	70	1	2½ to 4	7.9 to 15	1:4:15	203	88.3	110	80.6	Not Tested	82.0

NOTES:

(1) PORTLAND CEMENT—To comply with ASTM C150, Type I, II or III; or ASTM C175, Type IA, IIA, or IIIA.
(2) LIME—To comply with ASTM C5 (Quicklime) or ASTM C207 (Hydrated) Type N or S.
(3) SAND AGGREGATE—To comply with ASTM C144.
(4) Based on mortars as delivered to mason having initial flows between 100 and 115%.

CONCLUSIONS: A 1:½:4½ mortar with MORTASEAL complies with ASTM C270, Type M, Property Specifications.
A 1:1¼:6 mortar with MORTASEAL or RED TOP Masons Hydrate complies with ASTM C270, Type S, Property Specifications.
A 1:2½:9 mortar with MORTASEAL or RED TOP Masons Hydrate complies with ASTM C270, Type N, Property Specifications.

SPECIFICATIONS

(The following are offered as desirable inclusions in any masonry specification, and are not intended as a complete section covering Masonry Specifications.)

GENERAL PROVISIONS

All masonry materials shall be protected from freezing so that they will remain above 35° F. until they have been placed and suitably protected.

Masonry shall be protected against freezing for at least 48 hours after placing. Unless such precautions against freezing are taken, no masonry shall be erected when temperature is below 32° F. on a rising temperature, or below 40° F. on a falling temperature. No masonry shall be laid on walls or footings that are frozen or contain frost.

MORTAR MATERIALS

Lime—shall be: *(select one)*
(MORTASEAL)
(RED TOP Masons Hydrated Lime)
(RED TOP Masons Quicklime)
manufactured by United States Gypsum Company.

Portland Cement—shall comply with ASTM C150, Type I, II, or III, or ASTM C175, Type IA, IIA, or IIIA.

Sand—shall comply with ASTM C144.

Water—used in mixing mortar shall be clean and free from deleterious amounts of acids, alkalies or organic materials.

LIME PREPARATION *(select one)*

(MORTASEAL shall be mixed without soaking or slaking.)
(RED TOP Masons Hydrated Lime shall be soaked at least 16 hours before using.)
(RED TOP Masons Quicklime shall be slaked and aged for at least 16 hours, or until the putty temperature is 80° F. or less.)

MORTAR MIX

1. Above Grade—Mortar made from materials complying with the above specifications shall be mixed in proportion of one bag Portland cement, two bags lime (or two and one half cubic feet quicklime putty), to not more than ten and one half cubic feet sand (1:2½:10½).

2. Below Grade—Mortar made from materials complying with these specifications shall be mixed in proportion of one bag Portland cement, one bag lime (or one and one quarter cubic feet quicklime putty), to not more than six and three fourths cubic feet of sand (1:1¼:6¾).

3. Specialized Uses—
(a) For extra-strength, reduce proportion of sand (i.e. 1:2½:8 or 1:1¼:5, but not less than 1:2:6¾ or 1:1:4½).
(b) For extreme strength or under excessive moisture conditions, reduce lime content (viz. 1:1/4:3).
(c) For glass block, use 1:1:4, or 1:1:5 mix.
(d) For power plant chimneys, use 1:2:5 mix.
(e) For ceramic tile, use 1:1:6 mix.
(f) For gypsum tile, use one part RED TOP Partition Tile Cement and three parts sand by weight.

WORKMANSHIP

Note to Architect: Detailed workmanship specifications will vary, depending on type of job and building units involved. However, it is suggested that on all masonry work, the following be incorporated:

1. Mortar shall be laid in a uniform bed without furrows and all joints shall be completely filled. Sufficient mortar shall be placed in mortar beds and in head and collar joints to completely fill all spaces between masonry units.
2. Highly absorbent brick shall be wetted (not *soaked*) before laying.
3. Mortar materials shall be accurately proportioned and thoroughly mixed. Retempering with additional water shall be kept to a minimum. Mortar which has been mixed for more than 2 hours shall be discarded.

UNITED STATES GYPSUM

General Offices: 300 West Adams Street, Chicago 6, Ill.

A.I.A. File 20

TECHNICAL INFORMATION

PLASTER BASES

ROCKLATH* PLASTER BASE

METAL LATH & ACCESSORIES

PYROBAR* GYPSUM PARTITION TILE

PARTITION SYSTEMS
ATTACHMENT SYSTEMS

UNITED STATES GYPSUM

1963

*T. M. Reg. U. S. Pat. Off.

UNITED
STATES
GYPSUM

A.I.A. File 20

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NOTE TO THE ARCHITECT

The United States Gypsum Company produces a wide variety of plaster bases, steel studs, and lathing accessories, various combinations of which will provide literally dozens of partition, ceiling and wall furring assemblies, each system providing different physical characteristics of structural stability, fire-rating and sound transmission loss. Careful consideration is required in selecting the materials and systems to fit the requirements of each project. This catalog is designed to assist the architect and builder in the selection of those plaster bases and systems for their support. The catalog outlines good practices for normal construction problems. It is not possible to make specific recommendations without knowing the project under design; however, it is possible to generalize. The following recommendations are listed in the order of preference:

Masonry Plaster Bases

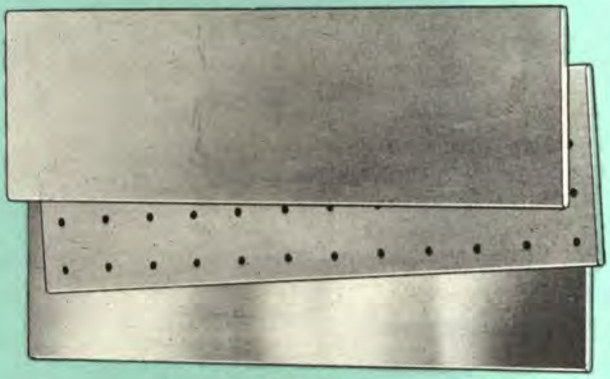
1. PYROBAR or Clay Tile
2. Dense Concrete Block
3. Lightweight Concrete Block

Note: A satisfactory masonry plaster base requires in addition to the best material, attention to the following considerations:

a. Lintels over door frames
b. Good mortar, with full mortar beds and end joints
c. Masonry laid with a running bond
d. Chases held to minimum in size and number
e. Control joints in long runs
f. Control joints where masonry partitions abut concrete structural members.

In other words, a masonry partition to be plastered should be built with the same care as if the masonry was to be left exposed.

PYROBAR



ROCKLATH

Lath Bases

The selection of lath base depends on its use. Two general statements can be made in the selection of a lath base.

1. If the lath is embedded in the plaster as in a solid plaster partition, **Metal Lath** is the preferred base.
2. If the lath and plaster surface is a flat, thin diaphragm supported by a grillage or attached to studs, ROCKLATH* is the preferred base, unless a scratch coat of wood fiber plaster is used with the metal lath.

Steel Studs

A partition system incorporating steel studs can be evaluated based on their structural characteristics, section modulus and the ultimate tensile strength of the steel used in stud fabrication, and the stress skin action incident to the method of attachment.

No. 1—TRUSSTEEL Studs
No. 2—L-P Studs
No. 3—Nonload Bearing Nailing Studs

Solid Plaster Partition

In solid plaster partitions, two inch thickness is the minimum recommended; the performance can be improved by increasing the thickness to 2¼ or 2½ inches. Of the four lathing systems, we recommend the following order of consideration.

1. ¾″ Channels and Diamond Mesh Metal Lath
2. ⅜″ Riblath, Studless
3. ½″ Long Length ROCKLATH
4. 1″ Long Length ROCKLATH

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*T.M. Reg. U.S. Pat. Off.

The United States Gypsum Company maintains a qualified staff of technical consultants. Architect Service Representatives headquartered in most major markets can assist the architect in resolving technical problems related to specific projects.

PYROBAR* Tile

PYROBAR is a precast gypsum partition tile for use as a gypsum plaster base. It is produced in four thicknesses, both hollow and solid, with indented surfaces.

Sizes: 2″ x 12″ x 30″ Solid
3″ x 12″ x 30″ Hollow and Solid
4″ x 12″ x 30″ Hollow
6″ x 12″ x 30″ Hollow

Complies with ASTM C52 and Federal Specification SS-T-316.

PYROBAR is an economical base for gypsum plaster and provides the greatest fire protection per inch of thickness of any commercial partition assembly.

ROCKLATH Plaster Base

ROCKLATH plaster base is a gypsum lath in sheet form providing a rigid base for the economical application of gypsum plasters. It is composed of a special gypsum core, faced on the sides and long edges with paper specifically manufactured for this prupose.

Complies with ASTM C37 and Federal Specification SS-P-431a, and Interim Federal Specification SS-L-0030.

ROCKLATH is an incombustible plaster base and when used with gypsum plaster provides for fire resistant construction. (See fire-ratings in technical data).

ROCKLATH is rigid and when securely attached adds lateral stability to the assembly.

ROCKLATH is fabricated in various products, each of which is adaptable to specific uses.

Plain ROCKLATH

Recommended for nail or staple application to wood and nailable steel framing, and for clip attachment to wood framing, steel studs and suspended metal grillage.

Sizes: 16 x 48 inches, ⅜ or ½ inch thick.
16 x 96 inches, ⅜ inch thick.
(Also made 16⅕ inches wide for Pacific Coast area)

Perforated ROCKLATH

Perforated ROCKLATH is identical in all respects with plain Rocklath plaster base except ¾ inch round holes are punched through the lath 4 inches on center in each direction, one ¾″ diameter hole for each 16 sq. in. of lath area. This provides, in addition to the natural plaster bond, a mechanical key. Higher fire ratings are obtained by the use of perforated ROCKLATH and gypsum plaster. (See Technical Data Tables, pages 12 & 13.)

Perforated ROCKLATH plaster base is not recommended for attachment to ceilings, either wood framing or metal grillage, where the only support provided is by clips at edges.

ROCKLATH FIRECODE* Plaster Base

ROCKLATH FIRECODE is a gypsum lath which combines all the advantages of Plain ROCKLATH with additional resistance to fire exposure—the result of a specially formulated core containing special mineral materials.

Presently available on the West Coast only.

Long Length ROCKLATH Plaster Base

Long length ROCKLATH is manufactured ½″ thick, 24″ wide, mill cut to ceiling high lengths as required up to 12 feet, and is formed with longitudinal "V" edges. This product is also available as a 1″ core unit, which consists of two ½″ x 24″ sheets mill laminated, with a ¾″ offset shiplap edge.

These products are designed primarily for use as the plaster base in 2″ solid ROCKLATH and plaster partition systems. (See 2″ Solid ROCKLATH and Plaster Partition Section for Details.)

TUFCON* Base

TUFCON Base is a tapered edge gypsum lath manufactured in large sheet form, incorporating a special face paper which provides controlled suction characteristics. The material is available in ½″ and ⅝″ thicknesses, plain and insulating, and in ⅝″ Type "X" where fire-resistive constructions are required. Sheet size: 4′-0″ width—8′-0″, 9′-0″, 10′-0″, 12′-0″ and 14′-0″ lengths. (Type "X" labeled by U.L., Inc.)

Thermal Resistance (R) of Insulating ROCKLATH*

SURFACE, HEAT FLOW & SEASON			ROCKLATH ⅜″	ROCKLATH ½″
HORIZONTAL	(up)	Winter	2.95	3.08
HORIZONTAL	(dn)	Summer	6.80	6.93
VERTICAL	(hor)	Winter	4.12	4.25
VERTICAL	(hor)	Summer	4.58	4.71

NOTE: Resistances are based on 1960 ASHRAE Guide and include still air film, ½″ sanded-plaster, and air space. (Horizontal surface air spaces are 7½″, Vertical ¾″—4″.)

Insulation—When properly installed with at least a ¾ inch air space next to the foil, insulating ROCKLATH plaster base provides positive insulation having a resistance of 3.38. When used on horizontal surfaces, for retarding the downward flow of heat, its insulating value is 10.06, or more than doubled. (See Thermal Resistance Chart). Tests and field observations over an extended number of years show that, in normal use, there has been insufficient corrosion of the foil to harm the insulating and vapor barrier characteristics of insulating ROCKLATH. The effect of dust on insulating ROCKLATH in a vertical position is negligible. A greater than normal dust deposit accumulation on insulating ROCKLATH in a horizontal position is required to seriously affect its insulating characteristics.

Economy—Labor costs for application of insulating ROCKLATH plaster base are no more than for plain or perforated ROCKLATH.

Insulating ROCKLATH Plaster Base

Insulating ROCKLATH provides all the advantages of plain ROCKLATH as a rigid plaster base, and is manufactured in the same sizes. Bright aluminum foil is laminated to the back of plain ROCKLATH providing an effective vapor barrier at no additional labor cost.

Long Length Insulating ROCKLATH Plaster Base

Long length Insulating ROCKLATH is manufactured ⅜″ thick, 24″ wide with square edges, and mill cut to ceiling high lengths, as required up to 12′-0″, with bright aluminum foil laminated to the back side.

Designed primarily for furring exterior masonry wall construction. (See USG Exterior Wall Furring System, pages 36 & 37.)

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*TM Reg. US Pat. Off.
†TM Reg. US Pat. Off. by Plastering Development Center, Inc.

ROCKLATH* & METAL LATH ACCESSORIES

METAL LATH

Metal lath is sheet steel that has been slit and expanded to form a multitude of small mesh openings.

It is made from rust-resisting copper alloy steel and is further protected by dipping the expanded sheet into black asphaltum paint. (Exception: 3.4 lb. diamond mesh when made from galvanized sheets.) For sizes and weights—See Data and allowable spans see Technical Data page 16.

USG* JUNIOR DIAMOND MESH LATH

A small diamond mesh metal plaster base (approximately 11,000 meshes per square yard).

A general all-purpose lath. Best for ornamental, contour plastering. The small meshes conserve plaster and reduce droppings. Nationally available. Also available in self-furring type having ¼″ "dimple" indentations spaced 1½″ o.c. each way for use as exterior stucco base, column fireproofing and for replastering over old surfaces.

Size—27″ x 96″.

Weights—2.5 lbs. (End Painted White) and 3.4 lbs. (End Painted Red) per square yard.

USG 4-MESH Z-RIBLATH

A "flat rib" type of lath with smaller mesh openings. Suitable for "double-up" type of plastering. An excellent nail-on lath, or for tie-on work on flat ceilings.

Size—27″ x 96″.

Weights—2.75 lbs. (End Painted White) and 3.4 lbs. (End Painted Red) per square yard.

Limitations of Use—Use Diamond Mesh lath for contour plastering.

USG ⅜″) RIBLATH

A herringbone mesh pattern with ⅜″ V-shaped ribs running lengthwise of the sheet at 4½″ intervals, with inverted intermediate 3/16″ ribs.

The heavy ribs provide exceptional rigidity. Used when supports are spaced more than 16″ o.c. and not more than 24″ o.c. and for 2″ solid studless metal lath and plaster partitions. Used as a centering lath for concrete floor and roof slabs.

Size—27″ x 96″. (Other lengths available.)

Weights—3.4 lbs. (End Painted Red) and 4.0 lbs. (End Painted Yellow) per square yard.

Limitations of Use—Its extreme rigidity makes ⅜″ Riblath unsuitable for contour plastering. Use Diamond Mesh Lath.

Due to ⅜″ rib, minimum ground thickness must be 1″.

USG ¾″) RIBLATH

A herringbone mesh pattern with ¾″ deep V-shaped ribs lengthwise of the lath at 6″ intervals.

A structural lath, providing the dual functions of centering and reinforcement for concrete floor and roof slabs.

Sizes—2′ x 8′, 2′ x 10′ and 2′ x 12′.

Weights—.60 lb. and .75 lb. per square foot.

Limitations of Use—Not recommended as a plastering lath.

USG EXPANDED METAL STUCCO MESH

A 1⅜″ x 3⅛″ diamond mesh pattern made of copper alloy steel, asphaltum painted. Designed as a base for exterior stucco, hand or pump applied.

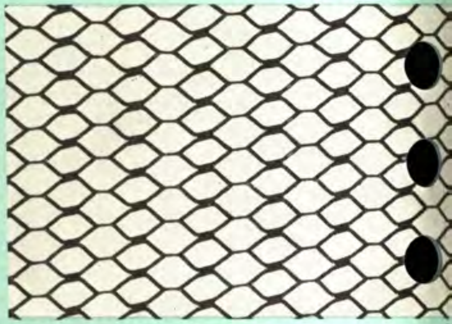
Size—48″ x 99″.

Weights—1.8 lbs. and 3.6 lbs. per square yard.

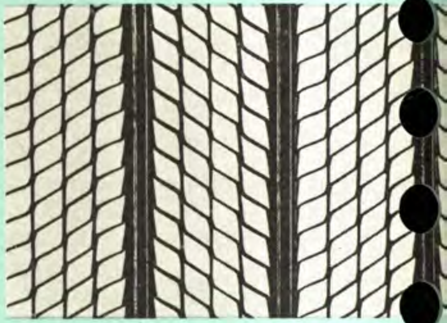
Limitations of Use—Should be applied with 1½″ galvanized self-furring nails.

When used over sheathing other than wood, fasten with longer nails, providing a minimum penetration of 1⅛″ into studs.

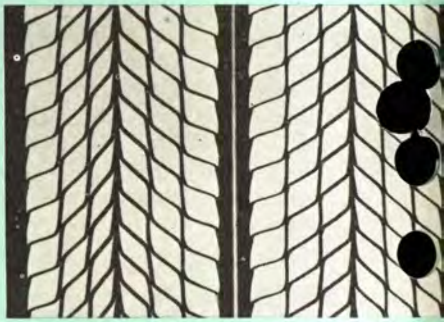
USG Junior Diamond Mesh Lath



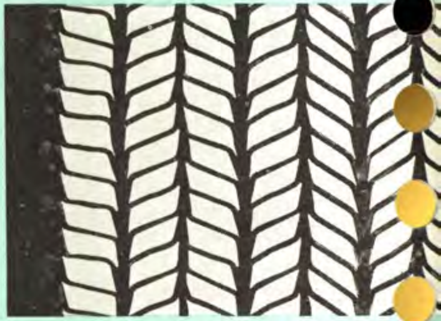
USG 4-Mesh Z-Riblath



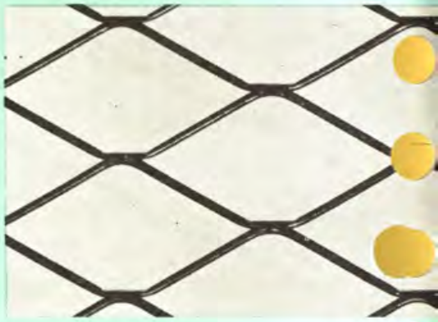
USG ⅜″ Riblath



USG ¾″ Riblath



USG Expanded Metal Stucco Mesh



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*T. M. Reg. U. S. Pat. Off.

USG CORNER BEADS

USG corner beads should be used on all external plaster angles to provide: (1) plaster protection, (2) true and straight lines at angles and (3) grounds for plastering.

Lengths: 7′, 8′, 9′, 10′ and 12′. Gauge of Steel: 26 gauge galvanized.

1-A EXPANDED CORNER BEAD

Its wide expanded flanges are easily flexed. Preferred for irregular corners. Provides increased reinforcement close to nose of bead.

4-A FLEXIBLE CORNER BEAD

The general purpose corner bead. Economical and most generally used. By snipping flanges, this bead may be bent to any curved design (for archways, telephone niches, etc.). Can be secured to corners with 9-A Corner Bead clip attached to flanges.

5-A BULL NOSE CORNER BEAD

A ¾″ radius bull nose bead with short flange. Used for rounded corners. Can be secured with No. 9-A Corner Bead Clips attached to flanges, where wide nailing flanges are required.

10-A EXPANDED BULL NOSE CORNER BEAD

A bull nose bead similar to above, but with 2½″ wide expanded flanges. Especially suitable on irregular corners.

USG SELV-EDGE CORNERITE AND STRIPLATH

Cornerite is a strip of copper alloy, painted, Diamond Mesh lath, bent lengthwise in the center, to form a 100° angle. Cornerite should be used in all internal plaster angles as reinforcement where metal lath is not lapped or carried around; over non-ferrous lath anchored to the lath; over internal angles of masonry constructions. (Cornerite is optional in Resilient, BRID-JOINT* lathing system. If used, it is secured to the lath, not the supports.)

Sizes—2″ x 2″ x 96″—3″ x 3″ x 96″.

Striplath is a strip of Diamond Mesh lath, copper alloy, painted—used as a plaster reinforcement over joints of non-metallic lathing bases and where dissimilar bases join.

Sizes—4″ x 96″—6″ x 96″.

USG SCREEDS

USG Screeds are used to divide different types of plaster finishes and as a separation between plaster and a cement base, or a permanent incombustible screed to control plaster thickness and alignment beneath the wood or other rigid base trim.

Lengths—10′-0″. Made of 26 gauge galvanized steel.

3-A EXPANDED BASE SCREED

A flush type ½″ ground (job shimmed for ¾″ grounds) with wide flexible expanded flanges for added reinforcement. Used as a dividing strip between plaster and flush portland cement base.

6-A PLAIN BASE SCREED

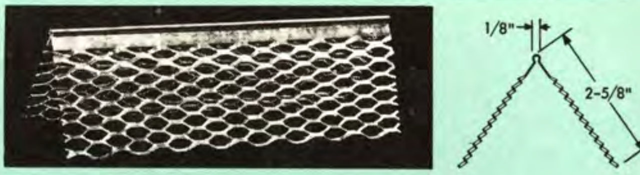
A flush type ½″ ground (job shimmed for ¾″ grounds), used as a straight divider strip between different types plaster, as between gypsum and portland cement.

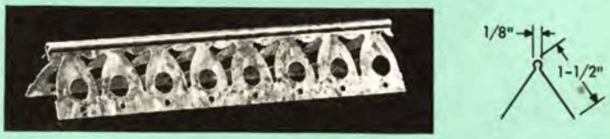
7-A CURVED POINT BASE SCREED

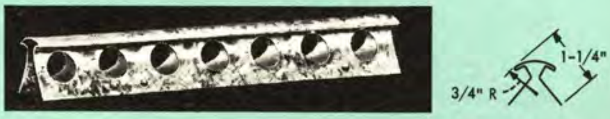
A dividing strip for use between plaster surface and projecting portland cement base. Upper ground is ½″, bottom ground is 1″.

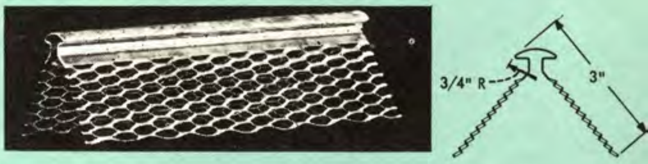
8-A PICTURE MOULD

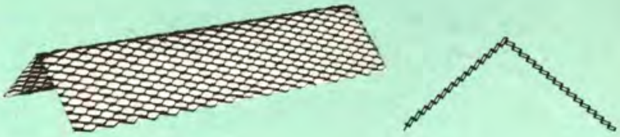
A concealed mould. Attached to lath and plastered flush to the notch opening. Grounds ½″ (job shimmed for ¾″ grounds).

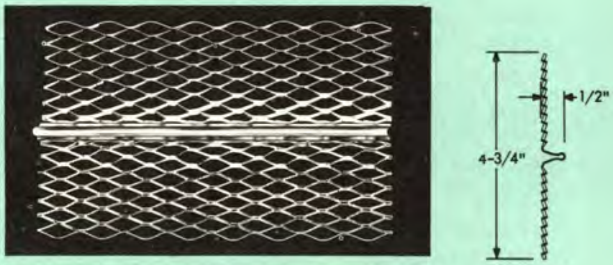


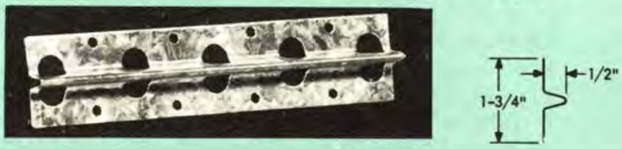


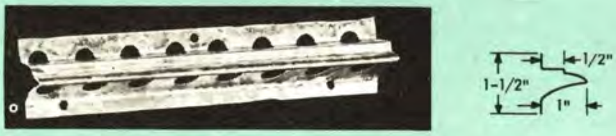


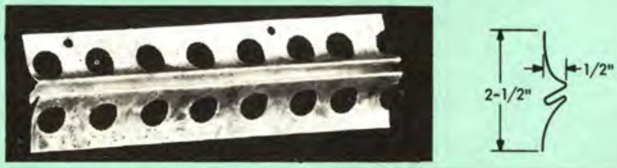












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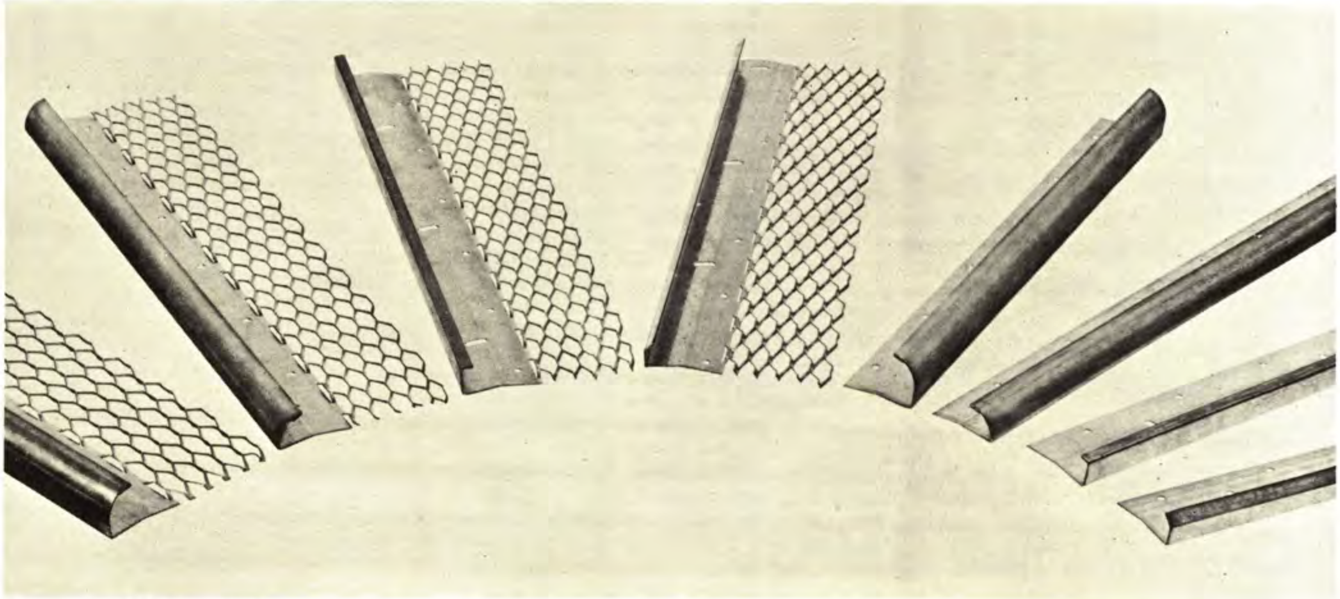
ROCKLATH*
PLASTER BASE & METAL LATH ACCESSORIES



USG CASING BEADS

USG Casing Beads are used as a plaster stop and as exposed trim around window and door openings.

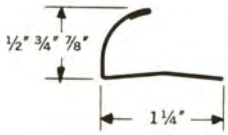
Casing Bead	Style	Flange	Gauge	Grounds
4	Quarter Rd.	Expanded	24	(½″, ¾)
138	Quarter Rd.	Short	24	(½″, ¾, ⅞)
60	Semi-Square	Expanded	24	(½″, ¾)
		Short	24	(½″, ¾, ⅞)
66	Square	Expanded	24	(½″ ¾, ⅝)
		Short	24	(½″, ¾, ⅞)

All casings are furnished in 7′, 8′ and 10′ lengths of galvanized steel for use with metal lath, ROCKLATH or masonry construction.

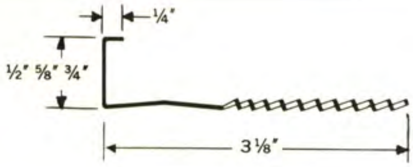
Caution—In order to insure proper grounds for plastering, ¾″ casing beads are recommended for use in conjunction with metal lath, ⅝″ casing beads with clay tile or brick: ⅞″ casing beads are recommended *when the flange is applied under* ROCKLATH plaster base.

½″ casing beads are recommended *when flange is applied over* ROCKLATH.

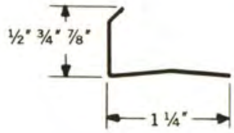
No. 138
QUARTER ROUND
(short flange type)



No. 66
SQUARE
(Expanded flange type)

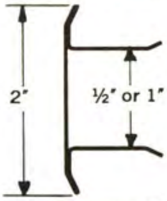


No. 60
SEMI-SQUARE
(Short flange type)



USG 2″ PARTITION TERMINAL

For use as a vertical terminal for 2″ solid metal lath or ROCKLATH partitions. Can be used as a ceiling runner where 2″ solid partitions abut an unplastered surface. Formed of 24 gauge galvanized and bonderized steel. Standard lengths 8′-0″ and 10′-0″. Available for use with ½″ or 1″ Long Length ROCKLATH.

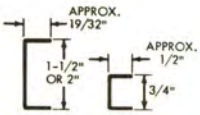


USG LATHING CHANNELS

USG Lathing Channels are cold rolled from 16-gauge steel, black asphaltum painted; used for furring, suspended ceilings, partitions, and ornamental lathing.

Lengths—16′ or 20′

Approx. Weights—¾″—300 lbs. per M Lin. Ft.
1½″—500 lbs. per M Lin. Ft.
2″—590 lbs. per M Lin. Ft.



*T.M. Reg. U.S. Pat. Off.

ROCKLATH*
ACCESSORIES

BRIDJOINT* Clips

Specially formed steel clips designed to provide a rigid alignment of gypsum lath where ends of lath do not fall at or on structural members.

BRIDJOINT Clip B-1

Field clip for ⅜″ Rocklath to support end joints of lath. Also manufactured for use with ½″ Rocklath.

BRIDJOINT Clip B-2

Used in conjunction with B-1 clips to eliminate nailing in corners and angles. For ⅜″ Rocklath only.

BRACE-TITE* Clips

Special wire clips for attaching ⅜″ Rocklath Plaster Base to metal grillages of ¾″ cold rolled channels or Trussteel* Studs when spaced not over 16″ o.c.

BRACE-TITE Field Clip BT-1

Used for suspended ceilings, exterior wall and beam furring and hollow pipe chase partitions. Designed to provide support across the full width of the lath and has spring action to increase rigidity. Designed for use with standard ¾″ cold rolled channels.

BRACE-TITE Starter Clip BT-1

Used in conjunction with BT-1 field clip to start first course of lath.

BRACE-TITE Acoustical Clip BT-A

Used for suspended ceilings with adhesive attachment of acoustical tile. Designed to provide support across the full width of the lath and not interfere with alignment of the tile.

TRUS-LOK* Field Clip TL-1

For attaching ⅜″ Rocklath Plaster Base to Trussteel* Studs.

TRUS-LOK Starter Clip TL-2

Used in conjunction with TL-1 clips to start first course of lath.

TRUS-LOK Finisher Clip TL-3

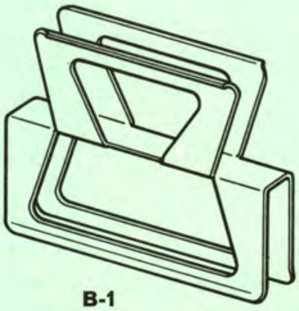
Used in conjunction with Trus-Lok TL-1 Clips and metal runner to finish top course of lath.

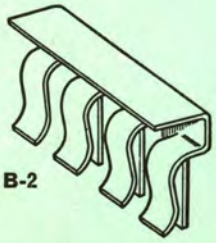
USG BRACING CLIP

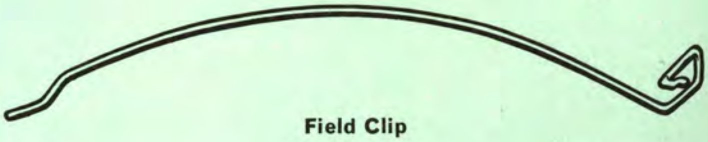
For attaching ¾″ channels to ½″ long length Rocklath as temporary braces in 2″ solid Rocklath and plaster partition construction.

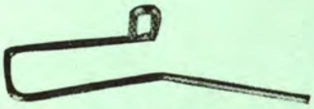
CEILING RUNNER CLIPS

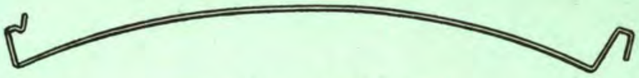
Used for attaching ½″ or 1″ laminated long length Rocklath to "L" shaped ceiling runner.

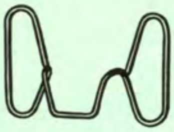

B-1

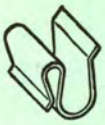

B-2

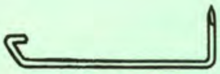

Field Clip

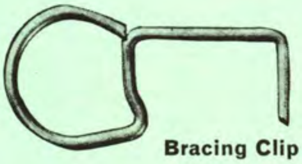

Starter Clip

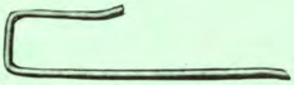

Acoustical Clip


TL-1


TL-2


TL-3


Bracing Clip


Ceiling Runner Clip

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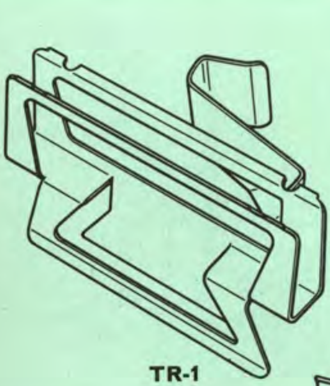
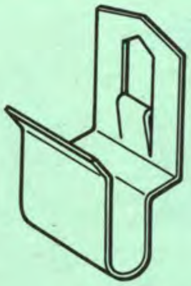
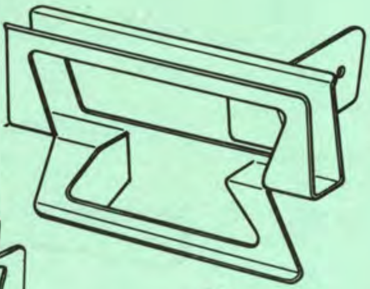
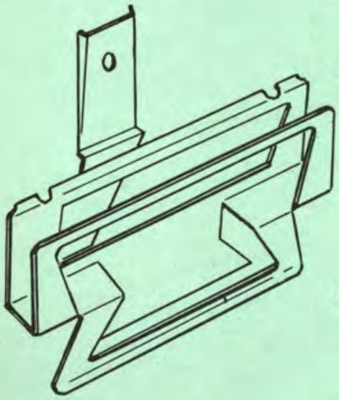
*T. M. Reg. U. S. Pat. Off.

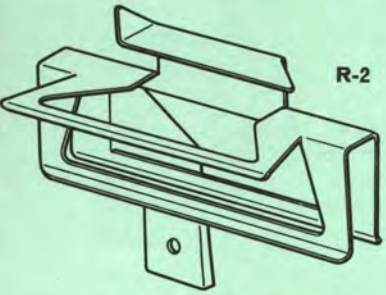
ROCKLATH* PLASTER BASE & METAL LATH RESILIENT CLIPS

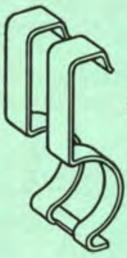

TR-1


R-SF


R-1


R-5


R-2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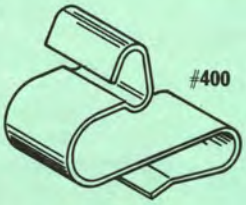
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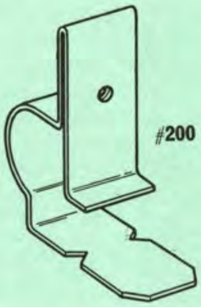
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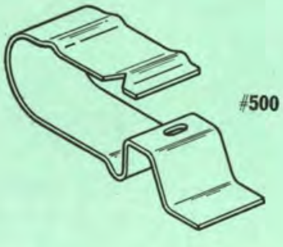
#500

USG RESILIENT LATHING SYSTEMS

USG Resilient Clips are specially formed to provide a non-rigid or floating attachment of ⅜″ Rocklath Plaster Bases to the structural frame, affording:

1. Increased protection against plaster cracking due to structural movement.
2. Increased sound transmission loss through the resilient attachment.

Resilient Clip TR-1

For attachment of ⅜″ Rocklath Plaster Base to Trussteel Studs spaced 16″ on centers.

Resilient Starter-Finisher Clip R-SF

Used in conjunction with TR-1 clip to start first course and finish top course of resilient Rocklath Plaster Base Partitions.

Resilient Clip R-5

For masonry walls. Rocklath is resiliently furred out ½″ from the face of the masonry. (See Attachment details on page 20.)

Resilient Clip R-1

For wood studs or joists spaced 16″ o.c. attached by nailing with 13 gauge, 1⅛″ lathing nail. Rocklath is floated ⅜″ free of framing members and held in place by the prongs of the clip.

Resilient Clip R-2

For corners and angles of wood frame construction. Used in conjunction with the R-1 Clips.

Resilient Clip No. 100

For resiliently attaching ¾″ cold rolled furring channels to 1½″ cold rolled runner channels in suspended ceiling construction.

Resilient Clip No. 200

For wood studs or joists. Clips spaced not over 12″ o.c. for ceiling construction or 16″ o. c. for sidewalls.
Attached by nailing with 13-gauge, 1⅛″ lathing nails. Metal lath is floated ½″ free of the framing members by wire tying to a ¼″ pencil rod, nested and tied to the inside of the tongue of the resilient clip.

Resilient Clip No. 400

For Trussteel Studs. Snapped in place, 16″ o.c., over the outer flanges of the Trussteel Studs.
¼″ pencil rod is snapped into the protruding tongue of the resilient cip, and metal lath wire tied in place.

Resilient Clip No. 500

For masonry walls. Nailed or stapled in place over Pyrobar* Gypsum Partition Tile, concrete blocks, clay tile or brick attachment. (See details, page 20.) Metal lath is resiliently furred out ⅞″ from the face of masonry by wire tying to ¾″ cold rolled channels wire tied inside the protruding tongue of the resilient clip.

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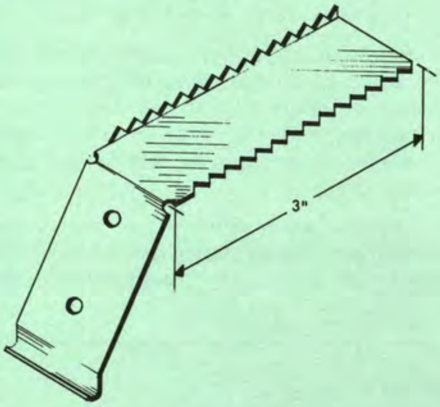
*T. M. Reg. U. S. Pat. Off.

ROCKLATH*
& METAL LATH ACCESSORIES

ADJUSTABLE WALL FURRING BRACKET

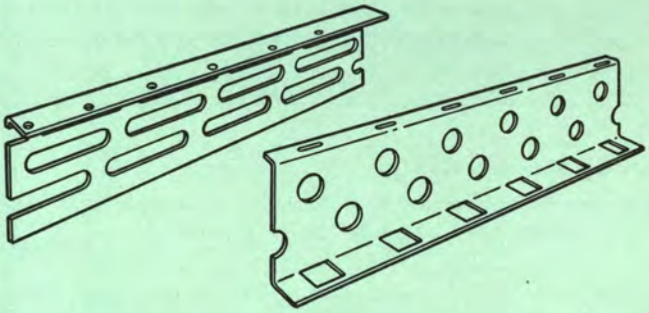
Made of 20 gauge galvanized steel with serrated edges for attaching ¾″ furring channels to exterior masonry walls. Refer to pages 36 & 37 for additional data covering the use of this bracket in Exterior Wall Furring Systems.



USG CEILING RUNNERS (Galv.)

L-Type—A specially designed ceiling runner providing top anchorage for studless metal lath or ROCKLATH solid plaster partitions.

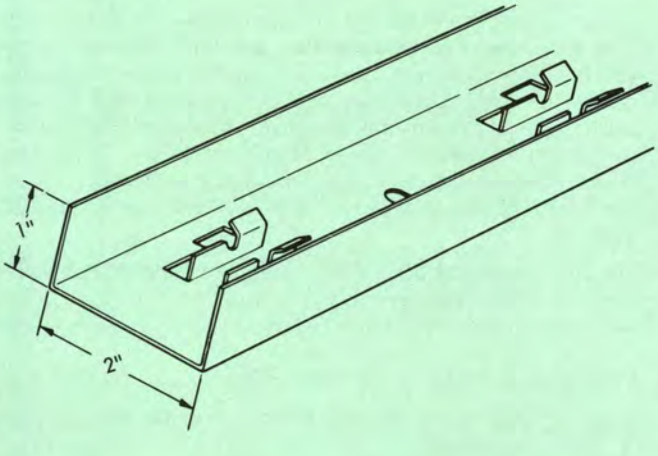
Z-Type—A specially designed ceiling runner providing positive anchorage and alignment of ¾″ channels in either solid partition construction or exterior wall furring.



USG FLOOR RUNNER AND SCREED

A one-piece, channel-type combination floor runner and screed used to anchor 2″ solid lath and plaster partitions to concrete floors with a minimum of labor. Can be cut with a hack saw or tin snips. Fastens to floor with concrete stub nails, rawl drives, or other suitable means. Base requires no grouting, except with studless metal lath partitions. One-inch legs provide an excellent ground establishing the 2″ thickness of the partition. Designed to be covered with asphalt or rubber base. Fireproof and economical, it's made of 20-gauge cold rolled steel painted black. 10′ lengths. Weight, 500 lbs. per 1,000 lineal feet. Packaged 100 lineal feet per bundle.

Available with center guides positioned for use with ½″ long length ROCKLATH, or 1″ laminated long length ROCKLATH Plaster Base.



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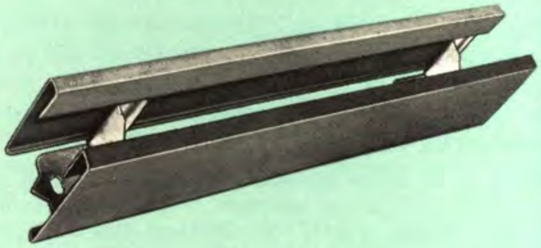
*T. M. Reg. U. S. Pat. Off.

USG*
METAL BASE & CLIP ATTACHMENTS

A flush, metal base system consisting of a 2½″ high face plate formed from 18-gauge steel, primed with a rust inhibitive paint, adaptable to all plaster partitions or furred exterior walls by the use of specially formed steel clips.

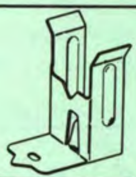
The cross section as designed provides a strong, rugged base. Substantial installation economies effected by the friction mounting snap-on application to the double base clip used in 2″ solid plaster partition or to the single base clip and combination stud base clip used with hollow partitions or furred walls.

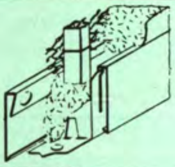
The face plates are easily notched and bent to form inside and outside corners, and are butted and spliced for continuous uninterrupted runs from one type of wall construction to another.



USG Double Base Clip

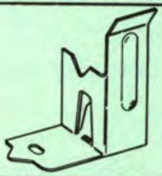
Designed to secure a solid plaster partition to the floor and provide attachment of the USG 2½″ Metal Base Face Plate to both sides. Available for the 2″ and 2¼″ Solid Partitions.

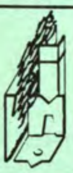




USG Single Base Clip

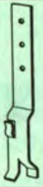
Used primarily as an attachment for the USG Metal Base Face Plate for furred walls or partition systems of varying widths.

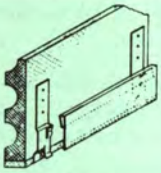




USG Masonry Clip

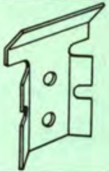
Designed for attachment of the USG Metal Base Face Plate to masonry, providing a ⅝″ plaster ground.

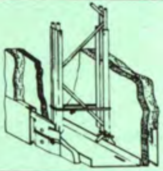




USG Stud Base Clip

For attachment of USG Metal Base Face Plate to studs. Clips may be wire tied, nailed or screwed to the studs.

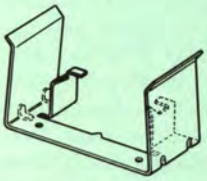


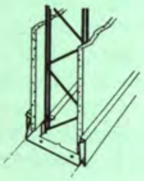


USG Combination Stud & Base Clip

Designed specifically for use in conjunction with Trussteel* Stud Partitions. Combination Stud and Base Clips are available for use with the 1⅝″, 2½″, 3¼″ and 4″ Trussteel Studs, where the lathing systems are conventional Rocklath* plaster base attachment, Resilient attachment of either Rocklath or Metal Lath to both sides of the Trussteel Studs, Resilient attachment of Rocklath or Metal Lath to one side of the stud and conventional attachment of Rocklath to the other.

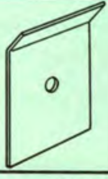
The Combination Stud and Base Clip eliminates the requirement for a floor runner track.

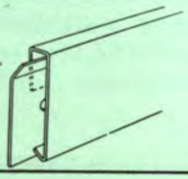




USG Splice Plate

Joins the USG Metal Base Face Plates together quickly and in proper alignment.



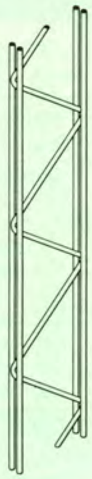


*T. M. Reg. U. S. Pat. Off.

STEEL STUDS & FURRING MEMBERS

TRUSSTEEL* STUDS

Trussteel Studs are fabricated in five stud widths, 1⅝″, 2½″, 3¼″, 4″ and 6″, and are mill cut to job lengths.



The Functional Concept of the truss design as formed from No. 7 gauge steel rods, provides excellent accommodations for pipes, conduits and ducts without impairing the strength of the partition assembly.

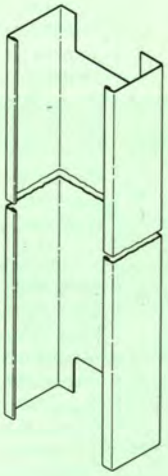
Strength—The strongest non-load bearing stud on the market. Formed of cold drawn steel wire rods with a tensile strength of 90,000 psi. The tensile strength of cold drawn wire rods is substantially higher than hot rolled sheets from which pressed metal and edge angle studs are formed.

Sound Transmission—The design of the Trussteel Stud and component accessories for attachment of plaster bases provides a family of sound isolation partition systems—the best in the industry and the most economical.

Fire Protection—1 and 2 hour fire-ratings can be obtained.

L-P STUDS

The L-P Studs are rolled formed in three stud widths, 1⅝″, 2½″ and 3⅝″, from a 26 gauge (.0227″) hot dipped galvanized steel sheet.



Economical—The secure rigid screw attachment of the plaster base utilizes the full structural contribution of the lath and plaster membrane, allowing the economical 24 inch spacing of studs. This "metal lumber" framing eliminates the requirement for component accessories.

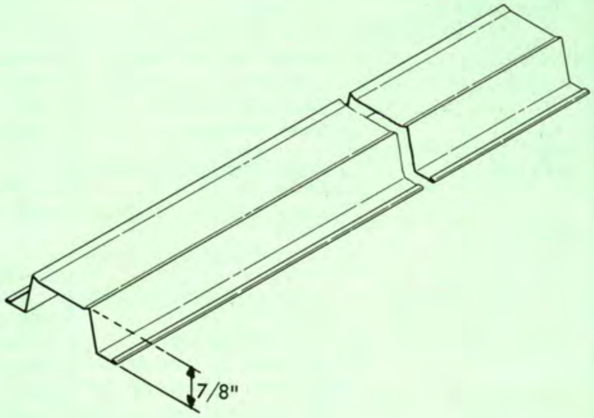
Limited chaseways are provided at top and bottom of the partition.

Sound Isolation—46 decibel average is excellent for a low cost partition.

Fire Protection—1 hour fire-rating can be obtained.

L-P FURRING CHANNEL

The L-P Furring Channel is rolled formed hat shaped section of 26 gauge (.0227″) hot dipped galvanized steel sheet.



The L-P Furring Channel may be clip (L-P Furring Clip) attached to the 1½″ main carrying channel and spaced 16 inches on center for the economical screw (L-P Screw, Type "S" ¾″) attachment of Rocklath* as a base for either adhesive attachment of acoustical tile or a basecoat plaster.

Spans 4′-0″ when spaced 16 inches on center.

The L-P Furring Channel provides an incombustible furring for exterior walls and may be spaced up to 24 inches on center for screw attachment of Rocklath plaster base.

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*T. M. Reg. U. S. Pat. Off.

FIRE RATINGS

COLUMNS

Plaster Base	Construction	Plaster and Aggregate Proportion	Plaster (1) Thickness	Fire Rating	Laboratory	Test No.
None	Direct Spray application	FIRECODE* Plaster "P" or "V"	2½"	4-hr.	U.L.	4142-6
	Direct Spray application	FIRECODE Plaster "P" or "V"	2⅛"	3-hr.	U.L.	4142-5
PYROBAR* Tile	3" Hollow, 12 ga. Metal crimp	Plaster—Sand 1:3	⅝"	4-hr.	BMS-92	Table #40
	2" Solid, 12 ga. Metal crimp	Plaster—Sand 1:3	⅝"	4-hr.	BMS-92	Table #40
Metal Lath	Furred out 1¼"	Plaster—Perlite 1:2, 1:3	1½"	4-hr.	U.L.	3187-3
	Furred out 1¼"	Plaster—Perlite 1:2, 1:3	1"	3-hr.	U.L.	3187-1
	Furred out ½"	Fire Rated STRUCTO-LITE	1⅞"	4-hr.	U.L.	3574-11
	Self-furring, wrapped around	Fire Rated STRUCTO-LITE	1¾"	4-hr.	U.L.	Design #6
	Self-furring, wrapped around	Plaster—Perlite 1:2, 1:3	1¾"	4-hr.	U.L.	Design #6
	Self-furring, wrapped around	Plaster—Perlite 1:2, 1:3	1⅜"	3-hr.	U.L.	Design #8
	Self-furring, wrapped around	Plaster—Perlite 1:2, 1:3	1"	2-hr.	U.L.	3187-2
	Self-furring, wrapped around	Plaster—Sand 1:2, 1:3	⅝"	1-hr.	NBS	Table #40
½" Long Length ROCKLATH* Plaster Base	Double layer, wiretied—20 ga., 1" hexagonal wire mesh	Plaster—Perlite 1:2, 1:3	1½"	4-hr.	NBS	278
	Double Layer, wiretied—20 ga., 1" hexagonal wire mesh	Plaster—Perlite 1:2½	1"	3-hr.	NBS	276
	Single Layer, wiretied—20 ga., 1" hexagonal wire mesh	Plaster—Perlite 1:2½	1½	3-hr.	NBS	277
⅜" Perforated	Single Layer—wire tied	Plaster—Perlite 1:2½	1"	2-hr.	NBS	275
	Single Layer—wire tied	Plaster—Sand 1:2½	⅝"	1½-hr.	NBS	274
	Single Layer—wire tied	Plaster—Sand 1:2½	½"	1-hr.	NBS	273

BEAMS

None	Direct Contour application	FIRECODE Plaster, Perlite or Vermiculite	1¾	4-hr.	U.L.	4142-3
	Direct Contour application	FIRECODE Plaster, Perlite or Vermiculite	1½"	4-hr.	U.L.	4142-4
	Direct Contour application	FIRECODE Plaster, Perlite or Vermiculite	1¼"	3-hr.	U.L.	4142-7
			1¼"	4-hr.	U.L. Can.	CR-252
Metal Lath	Boxed Beam	FIRECODE Plaster, Perlite or Vermiculite	1¹³⁄₁₆"	4-hr.	U.L.	4142-2
	Boxed Beam	FIRECODE Plaster, Perlite or Vermiculite	1"	4-hr.	U.L.	4142-4
	Boxed Beam	FIRECODE Plaster, Perlite or Vermiculite	1"	3-hr.	U.L.	4142-1
	Wrapped—⅜", 3.4# Rib lath	Plaster—Perlite 1:2	1½"	4-hr.	U.L.	Design #8
	Suspended Ceiling	Plaster—Perlite 1:2, 1:3, Acoustical Plaster	¾"-½"	5-hr.	NBS	338
	Suspended Ceiling	STRUCTOLITE* Plaster Type S	¹⁵⁄₁₆"	4-hr.	U.L.	Design #12
	Suspended Ceiling	STRUCTOLITE* Plaster Type R	¹¹⁄₁₆"	3-hr.	U.L.	3574-5
⅜" Perf. ROCKLATH	BRACETITE* Lathing System	Plaster—Perlite 1:2½	⅞"	3-hr.	NBS	337

FLOOR & CEILING

Direct application	Full Cellular Steel Floor	FIRECODE* Plaster, Contour Application	⅝"-¾"	3-hr.	U.L.	4142-3
	Full Cellular Steel Floor	FIRECODE Plaster, Contour Application	½"	2-hr.	U.L.	4142-1
	Cellular Steel Floor (Blend)	FIRECODE Plaster, Contour Application	¾"-1"	3-hr.	U.L. Can.	CR-252
	Cellular Steel Floor (Blend)	FIRECODE Plaster, Contour Application	¾"	2-hr.	U.L.	4142-2
	Elect-re-form Steel Deck	FIRECODE Plaster, Contour Application	¾"	3-hr.	U.L.	4142-7
	Granco E/R Cofar	FIRECODE Plaster, Contour Application	¾"	3-hr.	U.L.	4142-4
Metal Lath	Cellular Steel Floor—Suspended Ceiling	Wool Fiber (Neat)	⅞"	4-hr.	BMS-92	Table 45
	Cellular Steel Floor—Suspended Ceiling	Perlite 1:2½, 1:2½	⅞"	4-hr.	U.L.	2993
	Cellular Steel Floor—Suspended Ceiling	Fire-rated STRUCTOLITE* Plaster	¾"	3-hr.	U.L.	3574-5
	Cellular Steel Floor—Suspended Ceiling	Perlite 1:2, 1:3	¾"	3-hr.	U.L.	3789
	Roof Deck Steel Form	Fire-rated STRUCTOLITE	¹⁵⁄₁₆"	4-hr.	U.L.	Design #12
	Bar Joists—2½" Concrete Slab	Plaster—Perlite 1:2, 1:3	⅞"	4-hr.	BMS-92	Table 43
	Bar Joists—2½" Concrete Slab	Wool Fiber (Neat)	⅞"	3-hr.	BMS-92	Table 43
	Bar Joists—2½" Concrete Slab	Plaster—Perlite 1:2, 1:3	⅝"	3-hr.	U.L.	3454-2
	Bar Joists—2" Concrete Slab	Plaster—Perlite 1:2, 1:3	⅝"	2-hr.	U.L.	3454-1
	Bar Joists—2¼" Concrete Slab	Plaster—Sand 1:2, 1:3	⅝"	2-hr.	BMS-92	Table 43
	Bar Joists—2" Concrete Slab	Plaster—Sand 1:2, 1:3	⅝"	1½-hr.	BMS-92	Table 43

(1) Plaster thickness measured from face of lath.

*T.M. Reg. U.S. Pat. Off.

FIRE RATINGS

FLOOR AND CEILING (Continued)

Plaster Base	Construction	Plaster and Aggregate Proportion	Plaster (1) Thickness	Fire Rating	Laboratory	Test No.
⅜″ Perf. ROCKLATH Plaster Base	Bar Joist—2″ Concrete Slab	BRACE-TITE, Mesh, Perlite 1:2, 1:3	1″	4-hr.	NBS	311
	Bar Joist—2″ Concrete Slab	BRACE-TITE, Mesh, Prelite 1:2½	½″	3-hr.	NBS	312
	Bar Joist—2″ Concrete Slab	BRACE-TITE, Dia. Wire Perlite 1:2, 1:3	⅝″	3-hr.	NBS	313
	Bar Joist—2″ Concrete Slab	BRACE-TITE, Dia. Wire Perlite 1:2½	½″	2-hr.	NBS	318
	Bar Joist—2″ Concrete Slab	BRACE-TITE, Dia. Wire Sand 1.2, 1:3	⅝″	2-hr.	NBS	345
	Bar Joist—2″ Concrete Slab	BRACE-TITE, Perlite 1:2½	⅝″	1-hr.	NBS	261-287
	Cellular Steel Floor—Suspended Ceiling	BRACE-TITE Dia. Wire Perlite 1:2½	½″	3-hr.	NBS	337
	Wood Joist	Plaster—Perlite 1:2½	½″	1-hr.	NBS	258
	Wood Joist	Plaster—Sand 1:2	½″	1-hr.	NBS	28
Metal Lath	Wood Joist	Plaster—Sand 1:2, 1:3	⅝″	1-hr.	NBS	Table 42

PARTITIONS

Plaster Base	Construction	Plaster and Aggregate Proportions	Plaster (1) Thickness	Fire Rating	Laboratory	Test No.	Weight per sq. ft.	Thickness
PYROBAR* Tile	4″ Hollow—Plastered 2 sides	Plaster—Sand 1:3	⅝″	4-hr.	O.S.U.	T-118	24	5¼″
	4″ Hollow—Plastered 1 side	Plaster—Sand 1:3	⅝″	3-hr.	O.S.U.	T-118	20	4⅝″
	3″ Solid—No Plaster	———————	—	3-hr.	O.S.U.	T-26	13	3″
	3″ Hollow—Plaster 2 sides	Plaster—Sand 1:3	⅝″	3-hr.	O.S.U.	T-118	22	4¼″
	3″ Hollow—Plaster 1 side	Plaster—Sand 1:3	⅝″	2-hr.	O.S.U.	T-1101	16	3⅝″
	3″ Hollow—No Plaster	———————	—	1-hr.	NBS	BMS-92	10	3″
TRUSSTEEL* Stud Metal Lath	4″ Stud—16″ o.c. Dia. Mesh	Plaster—Perlite 1:2, 1:3	1″	2-hr.	U. of B	———	11	6¼″
	3¼″ Stud—16″ o.c. Dia. Mesh	Wood Fiber (Neat)	¾″	2-hr.	BMS-92	Table 31	11	5″
	2½″ Stud—16″ o.c. Dia. Mesh	Wood Fiber (Neat)	⅝″	1½-hr.	BMS-92	Table 31	9.5	4″
	1⅝″ Stud—16″ o.c. Dia. Mesh	Sand 1:1, 1:2	¾″	1½-hr.	O.S.U.	T-886	16	3⅜″
	3¼″ Stud—16″ o.c. Dia. Mesh	Sand 1:2, 1:2	⅝″	1-hr.	BMS-92	Table 31	13	4¾″
	3¼″ Stud—16″ o.c. Dia. Mesh	Sand 1:2, 1:3	¾″	1-hr.	BMS-92	Table 31	16	5″
TRUSSTEEL Stud Resilient Metal Lath	1⅝″ Stud 16″ o.c. Dia. Mesh	Sand 1:2, 1:3	⅝″	1-hr.	O.S.U.	T-1263	13	4⅛″
TRUSSTEEL Stud Perf. ROCKLATH	2½″ Stud 16″ o.c. TL-1 Clip	Perlite 1:2, 1:2	¾″	2-hr.	O.S.U.	T-1813	11	5″
	1⅝″ Stud 16″ o.c. TL-1 Clip	Sand 1:1, 1:2	½″	1½-hr.	O.S.U.	T-887	12	3⅝″
	2½″ Stud 16″ o.c. TL-1 Clip	Sand 1:2	½″	1-hr.	O.S.U.	T-347	12	4½″
	2½″ Stud 16″ o.c. TL-1 Clip	Perlite 1:2½	½″	1-hr.	O.S.U.	T-118	8.5	4½″
TRUSSTEEL Stud Resilient ROCKLATH	1⅝″ Stud 16″ o.c. TR-1 Clip	Sand 1:2	½″	1½-hr.	O.S.U.	T-1262	12	4⅜″
L-P Stud—Perf. ROCKLATH	2½″ Stud 24″ o.c. Screw attached	Sand 1:2½	½″	1-hr.	O.S.U.	T-1974	12	4¼″
Wood Stud Metal Lath	16″ o.c. Dia. Mesh	Wood Fiber (Neat)	⅞″	2-hr.	BMS-92	Table 30	16	5⅜″
	16″ o.c. Dia. Mesh	Wood Fiber (Neat)	⅝″	1½-hr.	BMS-92	Table 30	13	5⅛″
	16″ o.c. Dia. Mesh	Sand 1:2, 1:2	⅝″	1-hr.	BMS-92	Table 30	13	5⅛″
	16″ o.c. Dia. Mesh	Sand 1:2, 1:3	¾″	1-hr.	BMS-92	Table 30	16	5⅜″
Wood Stud ROCKLATH	Stud 16″ o.c.—Plain ROCKLATH	Sand 1:2	½″	1-hr.	O.S.U.	T-1380	12.5	5⅜″
	Stud 16″ o.c.—Perf. ROCKLATH	Perlite 1:2½	1″	2-hr.	O.S.U.	T-961	14	6⅜″
	Stud 16″ o.c.—Perf. ROCKLATH	Perlite 1:2½	½″	1½-hr.	NBS	252	9	5⅜″
	Stud 16″ o.c.—Perf. ROCKLATH	Sand 1:2	½″	1-hr.	O.S.U.	T-948	13	5⅜″
Solid Plaster	¾″ Channels, Metal Lath	Wood Fiber (Neat)	2″	2-hr.	NBS	116	15	2″
	¾″ Channels, Metal Lath	Perlite 1:2, 1:2	2½″	2-hr.	U.L.	4459	12	2½″
	¾″ Channels, Metal Lath	Sand 1:2, 1:2	2″	1-hr.	O.S.U.	T-129	18	2″
	½″ Long Length ROCKLATH	Perlite 1:2, 1:3	1″	2-hr.	NBS	300	12	2½″
	½″ Long Length ROCKLATH	Sand 1:1, 1:2	¾″	1-hr.	O.S.U.	T-117	16	2″
	⅜″ Rib Metal Lath	Sand 1:2, 1:2	2″	1-hr.	O.S.U.	T-162	18	2″
	1″ Laminated Long Length ROCKLATH	Sand 1:2½	½″	1-hr.	O.S.U.	T-1340	13	2″

NOTE: Complete construction of these tests related to these fire ratings are available on request.

(1) Plaster thickness measured from face of lath.

SOUND TRANSMISSION

The sound transmission loss or the sound isolative efficiency of any construction is dependent upon:

1. **Its mass,** or unit weight
2. **Its limpness,** or inelasticity
3. **Its integrity,** or lack of openings

Mass—The first rule of thumb in sound isolation—Double the mass and add approximately 5 decibels. In other words, if the average sound transmission loss of a 2″ solid partition is 37 decibels, the average loss of a 4″ solid partition would be 42 decibels, 5 decibels greater.

A sanded basecoat plaster adds mass inexpensively to most constructions.

Limpness—The second rule of thumb in sound isolation—Double the air space between free standing surfaces and add approximately 5 decibels. It is possible to limply connect two rigid surfaces by resilient connections. For example, a 1⅝″ TRUSSTEEL* Stud, with TR-1 Resilient Clips, ROCKLATH* plaster base and plaster each side, has an average sound transmission loss of 46 decibels and a free air space of 2⅜ inches. By using the same TR-1 Resilient Clips, ROCKLATH and plaster on a 4″ TRUSSTEEL Stud, which doubles the free air space to 4¾ inches, the average sound transmission loss will be increased to 51 decibels.

Integrity—The transmission of sound through a single square inch of opening equals the total loss through 100 sq. ft. of a 3″ PYROBAR* gypsum tile wall plastered both sides.

Testing Facilities—There are three very well recognized testing laboratories, National Bureau of Standards, Riverbank Laboratory and Geiger & Hamme Laboratory. Riverbank Laboratory in December, 1956, changed their testing facilities, so today we have four distinctly different sets of sound transmission data. While all tests are conducted under the ASTM Standard E61-90T, the results between laboratories are not directly comparable because of the size panels tested. It can be noted that while the actual decibel ratings may vary slightly between laboratories, the partition constructions usually fall in the same order of performance.

Ratings—The *Average* sound transmission loss rating is not a dependable basis of analyzing any construction.

The *Classification* of sound transmission loss, as now being reported, is a reliable relationship of the sound transmission loss data related to a predetermined standard criteria.

Since the *Classification* is not available on older tests the full range of frequencies should be carefully investigated. It is always good practice to require a copy of the test to determine the exact construction tested.

LABORATORY TESTS—CEILINGS (Up and over partitions)

SOURCE	CEILING CONSTRUCTION	Test Number	Frequency									Ave.	Class
			125 128	175 192	250 256	350 384	500 512	700 768	1000 1024	2000 2048	4000 4096		
GEIGER AND HAMME (1)	Suspended 1½″ Cold Rolled Carrying Channels 48″ o.c with ¾″ Cold Rolled Runner Channels Spaced 16″ o.c., ⅜″ ROCKLATH-BRACE-TITE* System ⅝″ Gypsum-Sand Plaster	USG-6 Ft.	32	37	34	41	44	49	53	49	56	44	47
	Suspended 1½″ Cold Rolled Carrying Channels 42″ o.c. with ¾″ Cold Rolled Runner Channels Spaced 13½″ o.c., 3.4 Diamond Mesh Metal Lath ⅝″ Gypsum-Sand Plaster	USG-10 Ft.	28	34	35	40	45	48	54	50	59	44	46
	Suspended 1½″ Cold Rolled Carrying Channels 42″ o.c. with ¾″ Cold Rolled Runner Channels Spaced 13½″ o.c., Runner Channels Attached to Carrying Channels with No. 100 Resilient Clips, 3.4 Diamond Mesh Metal Lath, ⅝″ Gypsum-Sand Plaster	USG-9 Ft.	28	35	35	40	45	49	54	50	59	44	46

(1) Size of Test Panels—Two 10′ x 14′ Suspended Ceilings With 30″ Deep Plenum Over 52 db Partition.

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*T.M. Reg. U.S. Pat. Off.

LABORATORY TESTS—PARTITIONS

SOURCE	PARTITION CONSTRUCTION	Test Number	Frequency									Ave.	Class	Partition Thickness	Weight Lbs. Per Sq. Ft.
			125 128	175 192	250 256	350 384	500 512	700 768	1000 1024	2000 2048	4000 4096				
NATIONAL BUREAU OF STANDARDS (2)	**STEEL STUDS**														
	3¼″ TRUSSTEEL* Studs 16″ o.c., # 400 Resilient Clips 2 sides 3.4# Diamond Mesh Metal Lath, ¾″ Gypsum-Sand Plaster	429	50	52	52	59	55	56	56	52	60	55	—	5¾″	19.2
	3¼″ TRUSSTEEL Studs 16″ o.c., 3.4# Diamond Mesh Metal Lath ¾″ Gypsum-Sand Plaster	229	40	34	29	41	37	42	40	48	53	40	—	4¾″	19.1
	WOOD STUDS														
	2″ x 4″ Studs 16″ o.c., R-1 Resilient Clips 2 sides ½″ Gypsum-Sand Plaster	420	46	44	46	56	54	57	57	50	62	52	—	6⅛″	13.1
	2″ x 4″ Studs 16″ o.c., #200 Resilient Clips 3.4# Diamond Mesh Metal Lath 2 sides, ¾″ Gypsum-Sand Plaster	425	47	50	48	51	52	54	54	51	61	52	—	5⅝″	19.1
	2″ x 4″ Studs 16″ o.c., ⅜″ ROCKLATH* Plaster Base ½″ Gypsum-Sand Plaster	148	33	28	31	35	39	44	46	49	66	41	—	5⅜″	15.2
	2″ x 4″ Studs 16″ o.c., 3.4# Diamond Mesh Metal Lath ¾″ Gypsum-Sand Plaster	228	29	28	28	38	38	43	45	46	54	39	—	5⅛″	18.1
	SOLID PLASTER														
	¾″ Channels 16″ o.c., 3.4.# Diamond Mesh Metal Lath 2½″ Gypsum-Sand Plaster	172	34	26	33	37	35	37	43	50	57	39	—	2½″	22.4
	¾″ Channels 16″ o.c., 3.4.# Diamond Mesh Metal Lath 2″ Gypsum-Sand Plaster	529	40	39	30	37	33	35	42	48	50	39	—	2″	17.9
	⅜″ Rib Lath, 2″ Gypsum-Sand Plaster	503	37	36	29	33	36	32	38	48	55	38	—	2″	18.4
	½″ Long Length ROCKLATH, ¾″ Gypsum-Perlite Plaster 2 sides	521	32	38	36	37	34	34	31	41	47	37	—	2″	10.9
	MASONRY—(All sound transmission tests on PYROBAR* partitions are based on ½″ plaster grounds. Standard plaster grounds are ⅝″. Check partition thickness.)														
	4″ PYROBAR, #500 Resilient Clips 1 side, 3.4# Diamond Mesh Metal Lath ⅞″ Gypsum-Sand Plaster, other side ½″ Gypsum-Sand Plaster	317	45	44	44	47	50	53	55	56	59	50	—	6¼″	31
	4″ PYROBAR, R-5 Resilient Clip 1 side, ⅜″ ROCKLATH ½″ Gypsum-Sand Plaster, other side ½″ Gypsum-Sand Plaster	318	43	41	42	46	52	52	56	55	61	50	—	6¼″	26
	3″ PYROBAR, R-5 Resilient Clip 1 side, ⅜″ ROCKLATH ½″ Gypsum-Sand Plaster, other side ½″ Gypsum-Sand Plaster	314	42	41	43	46	48	51	53	56	60	49	—	5¼″	24
	3″ PYROBAR, #500 Resilient Clips 1 side, 3.4# Diamond Mesh Metal Lath ⅞″ Gypsum-Sand Plaster, other side ½″ Gypsum-Sand Plaster	313	38	40	37	40	44	48	51	56	59	46	—	5¼″	27
	4″ PYROBAR, ½″ Gypsum-Sand Plaster 2 sides	305	37	42	42	41	38	42	45	49	49	43	—	5″	23.4
	3″ PYROBAR, ½″ Gypsum-Sand Plaster 2 sides	309	40	38	34	31	39	42	44	48	48	40	—	4″	21.1
RIVERBANK ACOUSTICAL LABORATORY (Prior to 12/31/56) (3)	**STEEL STUDS**														
	2½″ TRUSSTEEL Studs 16″ o.c., #400 Resilient Clips 2 sides ⅜″ Perforated ROCKLATH, ½″ Gypsum-Sand Plaster	TR-54-73	40	45	49.5	52.6	52.6	52.6	55.5	51.5	47.5	51	—	5¼″	17
	2½″ Staggered TRUSSTEEL Studs, 16″ o.c. each side ⅜″ Perforated ROCKLATH, ½″ Gypsum-Sand Plaster	TR-53-22	39	42.5	46.5	52	54.5	54.5	54	56.5	59	51	—	5¼″	16.5
	2½″ TRUSSTEEL Studs 16″ o.c., ⅜″ Perforated ROCKLATH ½″ Gypsum-Sand Plaster	TR-53-23	30	36.5	45	50	52	53	54	54.5	57	48	—	4½″	16.2
	2½# TRUSSTEEL Studs 16″ o.c., ⅜″ Perforated ROCKLATH STRUCTO-LITE* Plaster	TR-54-42	22.5	29	40	45.5	48.5	50	52	52	54	44	—	4½″	9.5
	WOOD STUDS														
	2″ x 4″ Studs 16″ o.c., ⅜″ Perforated ROCKLATH ½″ Gypsum-Sand Plaster	TR-56-12	30.5	34	40.5	44	46	47	51	50.5	56	44	—	5⅜″	15.2
RIVERBANK ACOUSTICAL LABORATORY (After 1/1/57) (3)	**STEEL STUDS**														
	1⅝″ TRUSSTEEL Studs 16″ o.c., #400 Resilient Clips 1 side 3.4# Diamond Mesh Metal Lath, ⅝″ Gypsum-Sand Plaster	TL-58-8	32.5	36.5	42	45.5	46	47.5	47	45	50	44	45	3⅝″	18.4
	1⅝″ TRUSTEEL Studs 16″ o.c., ⅜″ ROCKLATH ½″ Gypsum-Sand Plaster	TL-58-7	27	31.5	37	41	42.5	44	46	39	47	39	41	3⅝″	12.3
	1⅝″ TRUSSTEEL Studs 16″ o.c., 3.4# Diamond Mesh Metal Lath ⅝″ Gypsum-Sand Plaster	TL-58-6	29	30	32	34	36	38	38	38	45	36	32	3⅛″	18
	1⅝″ TRUSSTEEL Studs 16″ o.c., TR-1 Resilient Clip 2 sides, ⅜″ ROCKLATH, ½″ Gypsum-Sand Plaster	TL-61-9	37	40	44	47	48	48	50	41	55	46	39	4⅛″	13.0
	3¼″ TRUSSTEEL Stud 16″ o.c., TR-1 Resilient Clip 1 side, ⅜# ROCKLATH, ½″ Gypsum-Sand Plaster	TL-60-128	39	40	45	48	48	48	51	41	54	46	38	5½″	12.8
	2½″ L-P Metal Studs 24″ o.c., ⅜″ Perforated ROCKLATH Screw applied both sides, ½″ Gypsum-Sand Plaster	TL-62-41	37	39	45	48	48	49	50	44	56	46	37	4¼″	14
	WOOD STUDS														
	2″ x 4″ Wood Studs 16″ o.c., R-1 Resilient Clip, 2 sides, ⅜″ ROCKLATH, ½″ Gypsum-Sand Plaster	TL-60-20	42	43	46	49	50	51.5	51.5	46.5	56	48	47	6⅛″	14.1
	MASONRY														
	3″ PYROBAR, R-5 Resilient Clip, 1 side, 7/16″ Gypsum-Sand Plaster on resilient side, 9/16″ Gypsum-Sand Plaster on other side. 1/16″ lime putty finish each side.	TL-60-127	33	37	38	46	48	50	51	55	64	47	50	5⅜″″	21.7

(2) Size of test panels—68¾″ wide by 84¾″ high.
(3) Size of test panels—66½″ wide by 81″ high.

*T.M. Reg. U.S. Pat. Off.

METAL LATH TECHNICAL DATA

TYPES & WEIGHTS OF METAL LATH AND SPACING OF SUPPORTS

Type of Lath	Weight	Type of Steel	Size Sheets	Maximum Allowable Spacings				
				Vertical Supports			Horizontal Supports	
					Metal			
	Per Square Yard			Wood	Solid Partitions	Others (5)	Wood or Concrete	Metal
Diamond Mesh	2.5 lb.	Copper Alloy (1)	27″ x 96″	16″	16″	12″	(4)	(4)
Diamond Mesh	3.4 lb.	Copper Alloy	27″ x 96″	16″	16″	16″	16″	13½″
Diamond Mesh	3.4 lb.	Galvanized (2)	27″ x 96″	16″	16″	16″	16″	13½″
⅛″ Z-Rib	2.75 lb.	Copper Alloy	27″ x 96″	16″	16″	16″	16″	12″
⅛″ Z-Rib	3.4 lb.	Copper Alloy	27″ x 96″	19″	24″	19″	19″	19″
⅜″ Rib	3.4 lb.	Copper Alloy	27″ x 96″	24″		24″	24″	24″
⅜″ Rib	4.0 lb.	Copper Alloy	27″ x 96″	24″		24″	24″	24″
Stuccomesh (3)	1.8 lb.	Copper Alloy	48″ x 99″	16″ (3)				
Stuccomesh	3.6 lb.	Copper Alloy	48″ x 99″	16″ (3)				
	Per Sq. Ft.							
¾″ Riblath	0.60 lb.	Copper Alloy	2′ x 8′—					
	0.75 lb.	Copper Alloy	10′ & 12′					

All metal lath (except galvanized) is painted with a rust-inhibitive black asphaltum paint.

Notes (1) Copper alloy lath contains from 0.2% to 0.25% pure copper.
(2) Galvanized lath is cut from galvanized steel.
(3) Stuccomesh generally applied over exterior sheathing.
(4) Not recommended except for fireproofing of steel shapes.
(5) Including vertical furring.

SIZE AND SPACING OF HANGERS

Size and Type	Maximum Ceiling Area Supported Per Hanger	Maximum Center to Center Spacing of Hangers Along Runners
No. 9 Gauge Galvanized Wire	12½ sq. ft.	4 ft.
No. 8 Gauge Galvanized Wire	16 sq. ft.	4 ft.
3/16″ Mild Steel Rod (1) (2)		
¼″ Mild Steel Rod (1) (2)	17.5 sq. ft.	5 ft.
3/16″ x 1″ Mild Steel Flat (1) (2)		

(1) Galvanized Rods and Rust Inhibitive painted or Galvanized Straps recommended where severe moisture conditions may occur.
(2) Not manufactured or supplied by United States Gypsum Company.

SIZE AND SPACING OF MAIN RUNNERS

Size and Type	Approx. wt. per 1000 lineal feet	Spacing of Hangers along Runners	Maximum. Center to Center Spacing of Runners
¾″ Cold Rolled Channel	300 lbs.	up to 2 feet	3′
¾″ Cold Rolled Channel	300 lbs.	up to 3 feet (1)	2′-3″
1½″ Cold Rolled Channel	500 lbs.	up to 3 feet	4′
1½″ Cold Rolled Channel	500 lbs.	up to 3′-6″	3′-6″
1½″ Cold Rolled Channel	500 lbs.	up to 4 feet	3′
2″ Cold Rolled Channel	590 lbs.	up to 5 feet	3′-6″

(1) For Concrete Joist Construction only.

SIZE AND SPACING OF CROSS FURRING MEMBERS

Spacing of Supports	Size	Approx. wt./1000 ft.	Maximum Spacing
3′-0″	¾″ Channel	300 lbs.	24″
3′-6″	¾″ Channel	300 lbs.	19″
4′-0″	¾″ Channel	300 lbs.	16″

*T.M. Reg. U.S. Pat. Off.

PYROBAR* PARTITIONS

DESCRIPTION

PYROBAR, a 12″ x 30″, precast, kiln dried, gypsum masonry unit, plaster base is made in:

2″ Solid for column fireproofing
3″ Hollow for partitions and column fireproofing
3″ Solid for partitions and column fireproofing
4″ Hollow for partitions and column fireproofing
6″ Hollow for partitions and column fireproofing

Complies with ASTM Designation C52-41 and Federal Specification SS-T-316.

FUNCTION AND UTILITY

Fireproof—PYROBAR provides the greatest fire protection per inch of thickness of most building materials.

Lightweight—Reduces dead load, lightest weight of available masonry units.

Plaster Bond—PYROBAR as a gypsum masonry unit is the most compatible masonry plaster base for gypsum basecoat plasters.

Sound Isolation—PYROBAR tile partitions combined with resiliently floated lath and plaster diaphgram provide excellent sound isolation.

Economical—Ease of maintenance and tenant renovations continue to make PYROBAR a leading office building partition construction.

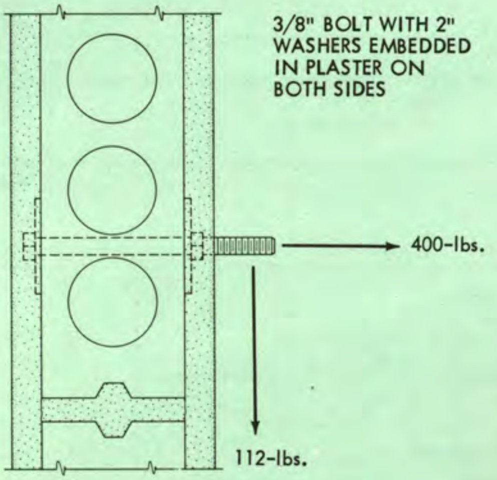
LIMITATIONS OF USE

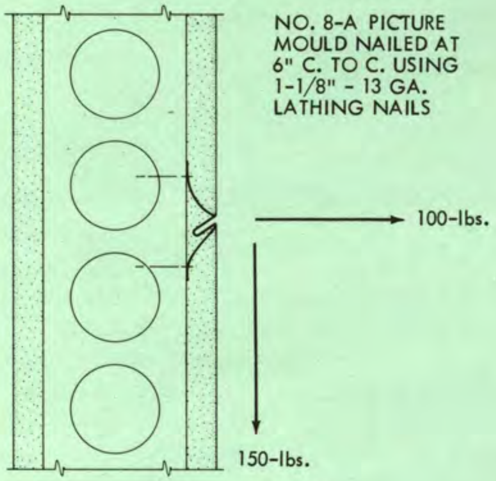
1. PYROBAR gypsum tile is a non-load bearing partition.
2. Portland cement and lime mortars do not bond to PYROBAR. Self-furring metal lath attached to PYROBAR is required to support a Portland cement plaster.
3. PYROBAR, like other masonry plaster bases, is subject to volume change due to fluctuations in temperature and moisture content. Control joints, as detailed on page 20, should be provided to relieve these stresses.
4. PYROBAR is not recommended for a masonry back-up of exterior wall construction.

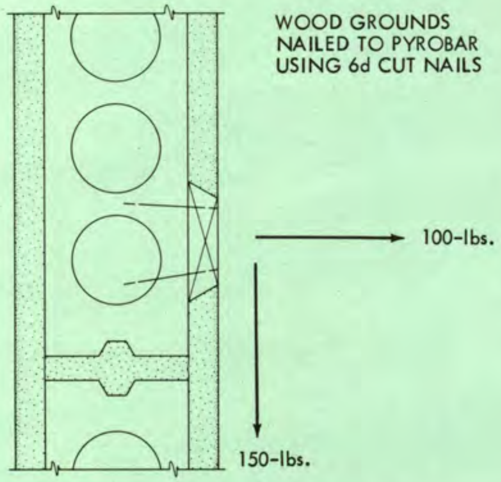
TECHNICAL DATA

Description	Thickness	Wt. per Sq. ft.	Limiting Height
3″ Hollow, Unplastered	3″	11 lbs.	13′
3″ Hollow, Plaster 1 side	3⅝″	16 lbs.	13′
3″ Hollow, Plaster 2 sides	4¼″	22 lbs.	13′
4″ Hollow, Plaster 1 side	4⅝″	19 lbs.	17′
4″ Hollow, Plaster 2 sides	5¼″	24 lbs.	17′
6″ Hollow, Plaster 2 sides	7¼″	33 lbs.	30′
Resilient Clip. 1 side			
3″ Hollow, M/L-PI	5¼″	23 lbs.	13′
4″ Hollow, M/L-PI	6¼″	26 lbs.	17′
3″ Hollow, R/L-PI	5⅜″	22 lbs.	13′

FIXTURE ATTACHMENT




NO. 8-A PICTURE MOULD NAILED AT 6" C. TO C. USING 1-1/8" - 13 GA. LATHING NAILS
100-lbs.
150-lbs.



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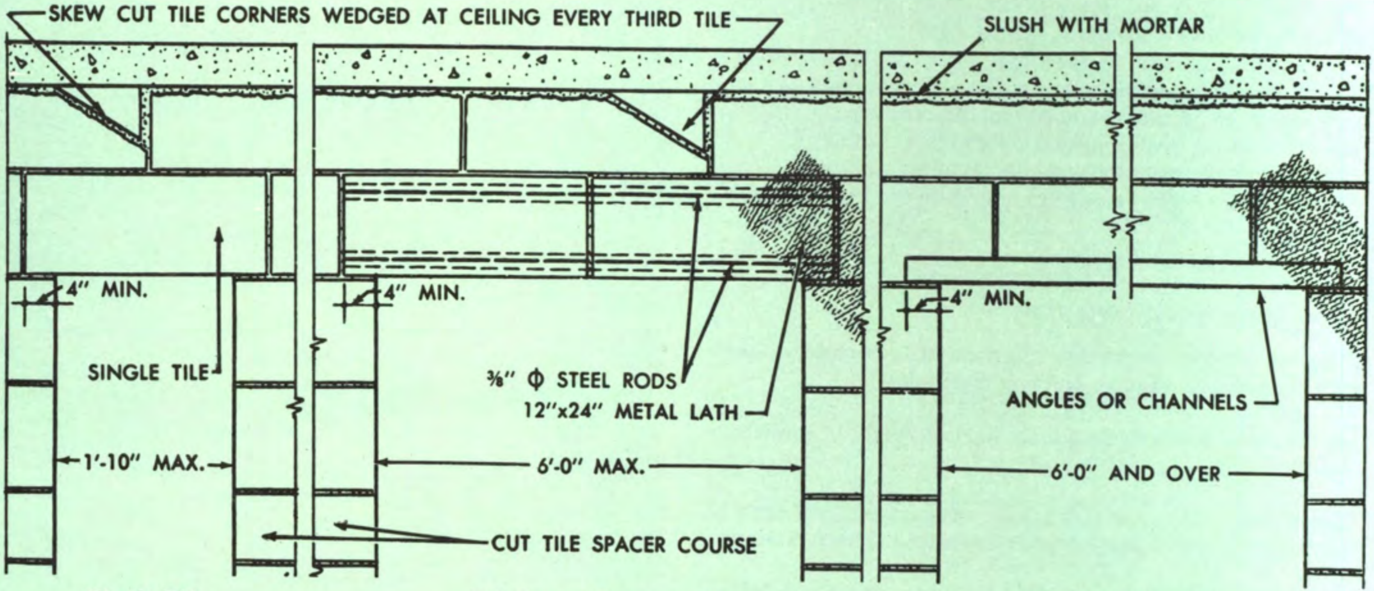
*T. M. Reg. U. S. Pat. Off.

PYROBAR GYPSUM TILE
PARTITION DETAILS

LINTEL CONSTRUCTION

Scale: ½" = 1'–0"



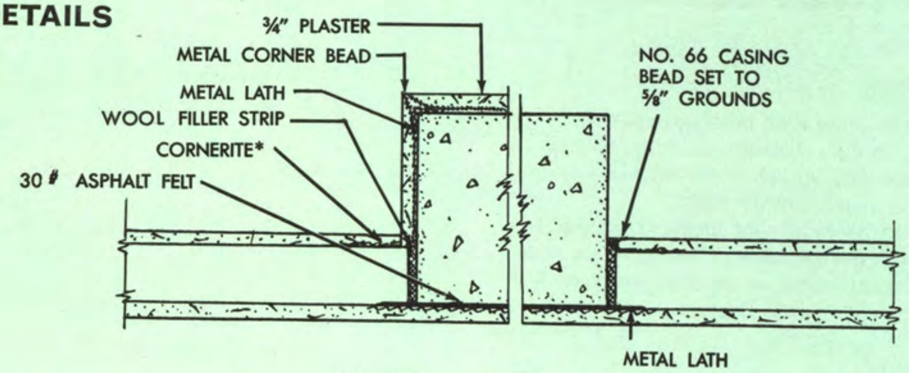
Single Tile Lintel

Reinforced Gypsum Tile Lintel

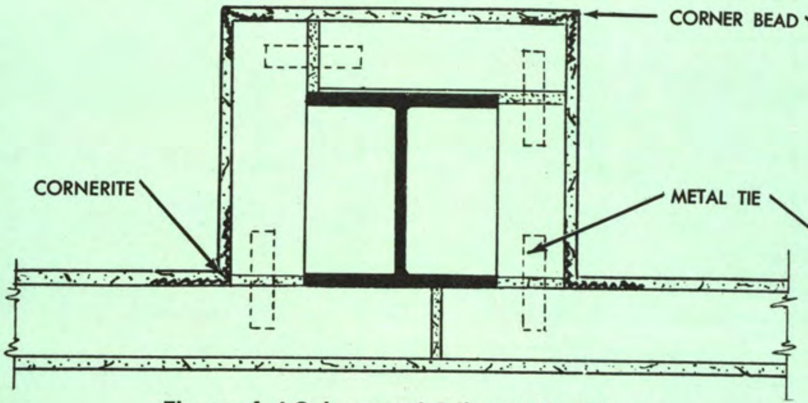
Angle or Channel Lintel

COLUMN DETAILS

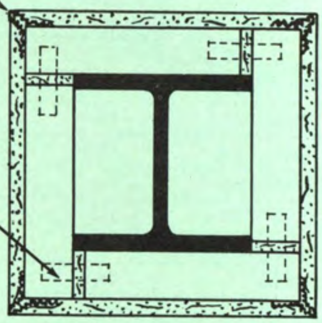
Scale: 1½" = 1'–0"



Flush Concrete Column Detail



Fireproofed Column and Adjacent Partition

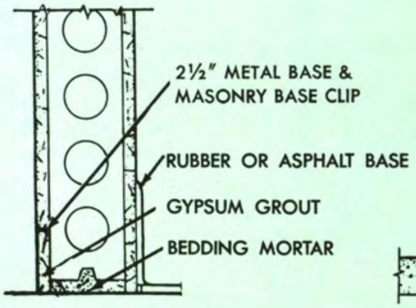


Column Fireproofing Detail

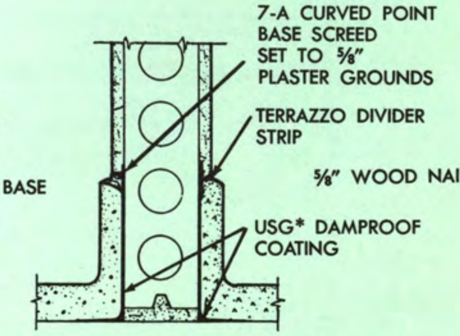
*T.M. Reg. U.S. Pat. Off.

BASE DETAILS

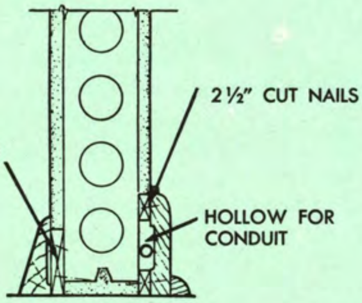
Scale: 1½″ = 1′–0″



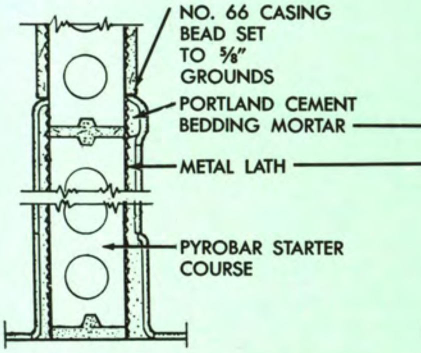
Metal And Rubber Base



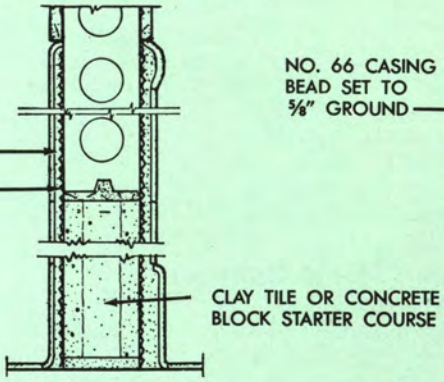
Cement And Terrazzo Base



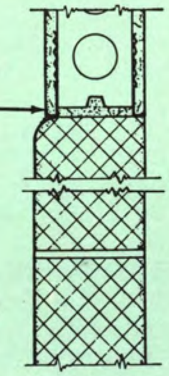
Wood Base


NO. 66 CASING BEAD SET TO ⅝″ GROUNDS
PORTLAND CEMENT BEDDING MORTAR
METAL LATH
PYROBAR STARTER COURSE

Ceramic Tile Wainscot



Ceramic Tile Wainscot

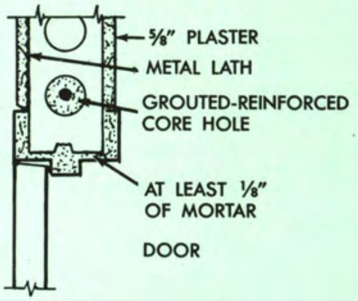


Structural Glazed Tile Wainscot

DOOR FRAME AND FRAMED OPENING DETAILS

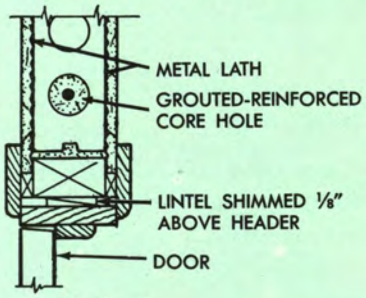
Scale: 1½″ = 1′–0″

METAL DOOR FRAME



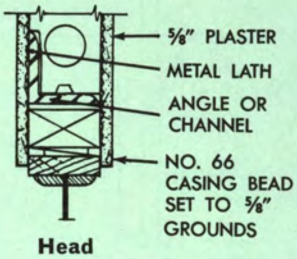
Head

WOOD DOOR FRAME

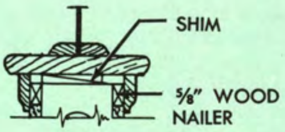


Head

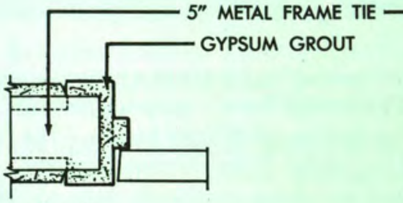
BORROWED LIGHT



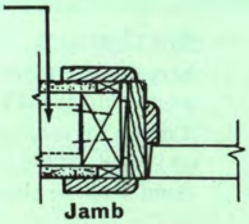
Head



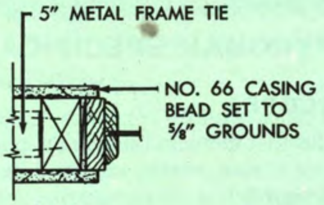
Sill



Jamb



Jamb



Jamb

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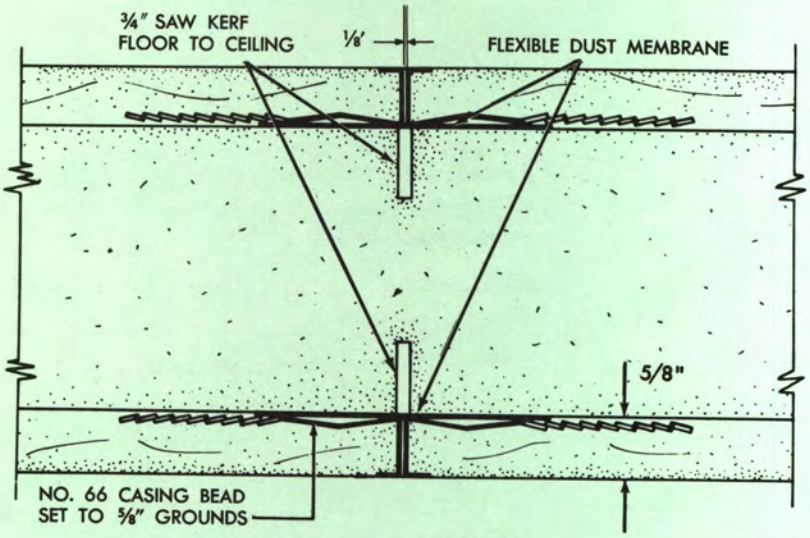
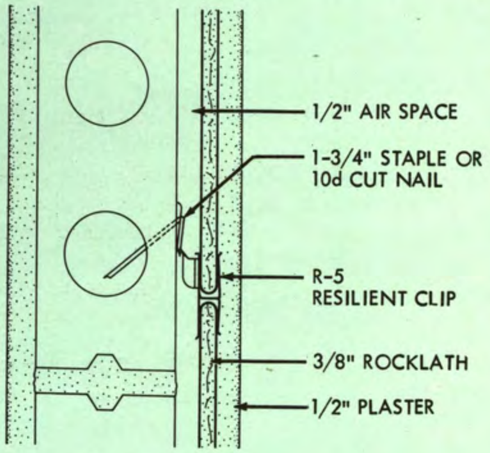
CONTROL JOINT



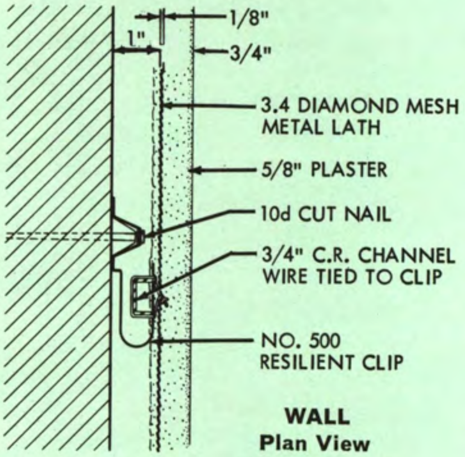
Control Joint
PYROBAR Partitions

Resilient PYROBAR Partition (Sound Control)



Note: Sound isolation can be improved by filling the air space with a 1 lb. density wool pad.

Resilient attachment of metal lath to PYROBAR or to masonry walls or partitions, using #500 Resilient Clips and ¾" channels.



WALL
Plan View

PYROBAR SPECIFICATIONS

SCOPE

Unless otherwise shown on plans, all partitions, including pipe chases, shafts, etc. shall be constructed of gypsum partition tile.

MATERIALS

Gypsum Partition Tile shall be PYROBAR, of sizes indicated, as manufactured by United States Gypsum Company.

Cement for mortar shall be RED TOP Partition Tile cement, as manufactured by United States Gypsum Company.

Sand shall be clean and sharp, complying with ASTM C35.

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*T. M. Reg. U. S. Pat. Off.

ERECTION

All mortar shall be mixed in proportions of 1 part Partition Tile Cement to 3 parts sand, by weight. Mortar shall not be retempered.

After door frames are erected and rough plumbing and wiring is in place, the first course shall be laid with core holes horizontal by bedding in mortar to a true and straight line according to partition layout as shown on plans. Succeeding courses shall be laid to a line in ½″ thick full mortar beds uniformly level in each course. Vertical joints shall be staggered and head joints shall be filled with ½″ of mortar. Cut all joints flush. Use of broken tile shall be kept to a minimum. Chinks and crevices shall be slushed full with mortar.

Partitions shall be well anchored to intersecting masonry walls 12½″ on center vertically with corrugated wall ties or 16d or 20d cut nails imbedded in mortar joints.

Wedge partition tightly at ceiling with skew cut tile corners every third tile. Joints between tile and ceiling shall be slushed full with mortar.

PYROBAR shall not be chased out more than half its thickness for conduit or other piping. Metal lath shall be placed flush over the chase and secured in place.

Steel door frames shall be anchored to the floor and to the PYROBAR with frame ties furnished by door frame manufacturer, minimum three each side (approximately 12″ from top and bottom and at center) laid in mortar joints. Space between tile and door frame jamb shall be slushed full with mortar as tile is laid into frame. Lintel construction shall be held at least ⅛″ above head of frame with mortar.

Borrowed light openings shall be anchored the same as door frames, except only two metal frame ties are required on the jambs (approximately at third points), of openings less than 80 inches high.

OPTIONAL INCLUSIONS

1. **Lintels**—Indicate the lintel construction as selected from page 18.
2. **Fixture Attachment**—Indicate the attachment desired as selected from page 17.
3. **Base** shall be:
   a. USG 2½″ Metal Base secured to PYROBAR partition with USG Masonry Base Clip. (See detail page 19.)
   b. Cement or terazzo base applied over metal lath secured to the first course of PYROBAR which has been coated with USG Dampproof coating from rough floor up to height of wet terrazzo (concrete) base. Care should be taken to get thorough application at joint of PYROBAR with rough floor (see detail page 19.)
   c. Wood base (plain or hollow for conduit shall be nailed to ⅝″ wood nailers secured to face of PYROBAR with 2½″ (8d) cut nails. (See detail page 19.)
4. **Wood Grounds** for plastering shall be nailed into tile with 2½″ (8d) cut nails at base and around openings to provide a ⅝″ total thickness of plaster.

SPECIAL CONDITIONS

1. When columns or beams are located in line of partitions so that the plane of plaster continues from the PYROBAR gypsum tile across the face of the structural member—
   a. Provide a control joint, as detailed on page 20, where PYROBAR abuts the structural members.
   b. Provide some isolation from structural stresses by:
      (1) Using a ½″ mineral wool resilient pad where PYROBAR abuts a structural member.
      (2) Using a 15 lb. asphalt felt across the face of the structural members to prevent bonding of the plaster to the column or beam.
      (3) Use 3.4 lb. self-furring diamond mesh lath across the asphalt felt, securely stapled to the PYROBAR. (See detail page 18.)
2. Vertical control joints shall be installed in partitions so that the maximum distance between control joints or partition termination does not exceed 30′.
3. Where Portland cement plaster is to be applied to PYROBAR partitions as a bedding coat for ceramic tile facing or other purposes, metal lath shall be first applied to the face of the PYROBAR. A USG No. 66 Casing Bead (⅝″ grounds) or other suitable plaster stop shall be used between the Portland cement plaster and gypsum plaster. (See detail page 19.)
4. Pieces of self-furring metal lath at least 12″ x 24″ shall be secured to the tile above and below the corners of openings.
5. 3″ x 3″ cornerite shall be used in all internal plastered corners except where PYROBAR partition abuts load bearing walls or partitions.

Resilient (Sound Control) PYROBAR Partitions:

1. Resilient Metal Lath

Securely attach the USG #500 Resilient Furring Clip to the face of the PYROBAR Partition using a 10d cut nail. Clips to be spaced not to exceed 16 inches on center both ways.

¾″ cold rolled channels shall be erected vertically, the legs of the channel nested into the grooves on the inner face of each clip and saddle tied.

3.4 lb. diamond mesh lath shall be secured to furring channels as herein specified.

2. Resilient ROCKLATH

USG R-5 Resilient Clips shall be securely attached to the PYROBAR tile with an angular driven 2″ fence staple with one leg penetrating the PYROBAR and the other bridging the attachment flange of the clip.

The clips shall be spaced at a maximum of 16 inches on center, and at each lath end joint.

Succeeding courses of ROCKLATH* plaster base shall be similarly applied with end joints staggered.

At the floor and ceiling line shim out the ROCKLATH using a narrow piece of ROCKLATH and nail in place.

STEEL COLUMN FIREPROOFING

1. PYROBAR Gypsum Tile (2″ solid) (3″ Hollow) shall be laid plumb and true, with tile interlocking at corners, with successive courses staggered. Other construction details shall be in accordance with appropriate Fire Test Report.

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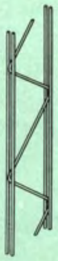
*T. M. Reg. U. S. Pat. Off.

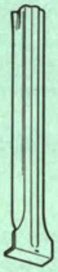
TRUSSTEEL*
STUD PARTITIONS

PARTITION THICKNESS—Normal Plaster Grounds

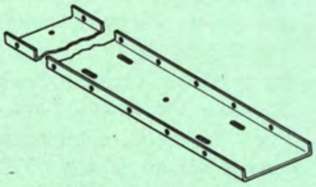
Stud Width	Modulus	ROCKLATH and Plaster or ⅜″ Riblath and Plaster	Diamond Mesh or ⅛″ Riblath and Plaster	Resilient ROCKLATH & Plaster	Resilient Metal Lath & Plaster	Maximum Partition Heights (1)			
						ROCKLATH	Metal Lath		
						Studs 16″ o.c.	Studs 24″ o.c.	Studs 19″ o.c.	Studs 16″ o.c.
1⅝ in.	.0635$''^3$	3⅝ in.	3⅛ in.	4⅛ in.	4⅛ in.	9′	—	—	9′
2½ in.	.1056$''^3$	4½ in.	4 in.	5 in.	5 in.	15′	9′	14′	15′
3¼ in.	.1420$''^3$	5¼ in.	4¾ in.	5¾ in.	5¾ in.	21′	13′	18′	21′
4 in.	.1825$''^3$	6 in.	5½ in.	6½ in.	6½ in.	22′	16′	20′	22′
6 in.	.277$''^3$	8 in.	7½ in.	8½ in.	8½ in.	26′	20′	24′	26′



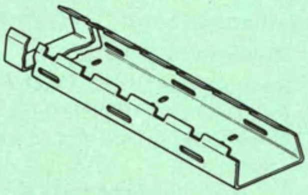
TRUSSTEEL STUD



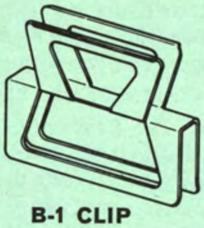
STUD SHOE



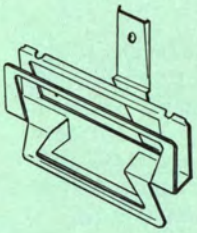
REGULAR RUNNER TRACK

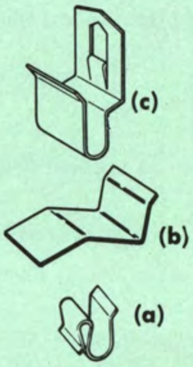


SNAP-IN RUNNER TRACK

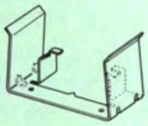


B-1 CLIP

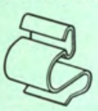




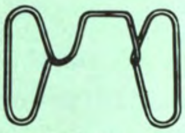
STARTER CLIPS



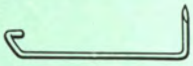
COMBINATION STUD BASE CLIP



#400 RESILIENT CLIP



TL-1 CLIP



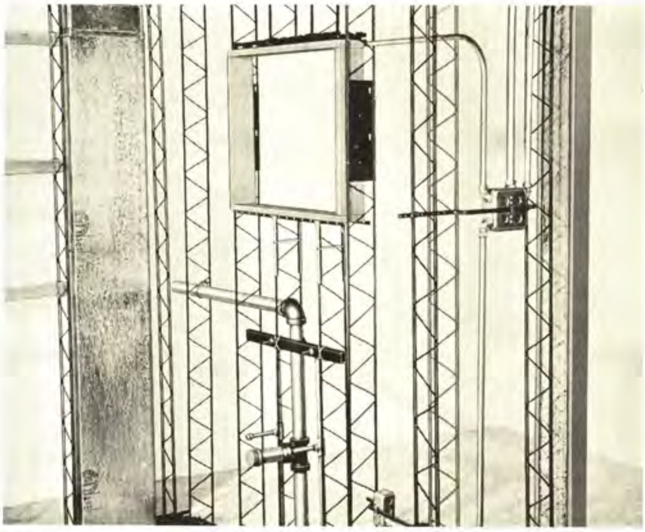
FINISHER CLIP

NOTES

1. The 1⅝″ Trussteel Stud Rocklath Plaster Base and plaster partition was designed to finish 3⅝″ overall, to permit its substitution for a 4 inch exposed concrete block partition.
2. All fire-rated partitions require the Trussteel Stud attachment to the ceiling runner track by the stud shoes.
3. Snap-In Runner Track with studs cut accurately to length may be used for a floor and ceiling attachment where the construction is non fire-rated.

*T. M. Reg. U. S. Pat. Off.

TRUSSTEEL* STUD PARTITIONS



DESCRIPTION

TRUSSTEEL Stud Partitions provide a very versatile alignment of partition systems. The TRUSSTEEL Studs provided in widths of 1⅝″, 2½″, 3¼″, 4″ and 6″, with limiting heights from 9′-0″ to 26′-0″ provide a strong frame for direct attachment of ROCKLATH* plaster base or metal lath. In addition to these partitions, resilient attachment of ROCKLATH or metal lath substantially improves the sound transmission loss characteristics by providing isolated faces.

FUNCTION AND UTILITY

The open web of the truss design provides maximum free space for encasement of pipes, ducts or conduit horizontally, vertically or diagonally, without impairing the structural integrity of the partition. Web members may be cut easily to accommodate larger ducts and pipes without seriously impairing the strength.

The TRUSSTEEL Stud Partitions provide:

1. **Sound Isolation**—The TRUSSTEEL Stud ROCKLATH plaster base Parition provides a very good sound isolation, 46 to 48 decibel average, at a low cost. The TRUSSTEEL Stud Partition with resilient clipped attachment of ROCKLATH and metal lath provides excellent sound isolation, 50 to 55 decibel average. (See technical data pages 14 and 15.)
2. **Fire Protection**—Incombustible components provide 1 and 2 hour protection. (See technical data pages 12 and 13.)
3. **Strength**—The TRUSSTEEL Stud is formed of No. 7 gauge, cold drawn wire rods, with a tensile strength of 90,000 psi. The resistance moment computed on the section modulus with the high tensile strength produces the strongest non-load bearing stud.
4. **Economical**—No other assembly provides the structural integrity, the strength, the sound isolation, the open core wall, and the fire protection at a comparable cost.
5. **Performance**—TRUSSTEEL Studs have been used since 1933, however, the real impetus to their use has been since 1952 when USG released the clip attachment for ROCKLATH, which increased the strength, improved the sound transmission loss by 8 decibels, and reduced the cost by 12½ percent. Approximately 50 percent of all steel studs used nationally are TRUSSTEEL Studs. The continued high level of use indicates their acceptance based on their performance.

LIMITATIONS

1. A non-load bearing partition.
2. Stud spacing limited to 16 inches on center for ROCKLATH and 3.4 lb. diamond mesh lath, 24 inches on center for a ⅜″ Riblath.
3. *Steel Door Frames:*
   a. Frame anchorage to the floor shall be by two power driven attachments, or equal, for each jamb. The floor anchors shall be welded to the frame in a manner that provides rigidity to the frame at the floor line.
   b. Flange returns must be rigid to control chip cracking due to vibration. Flange returns welded to a minimum of four jamb anchors and grouting the frame with gypsum mortar will minimize vibration.
   c. Frame should be fabricated of not less than 16 gauge metal.
   d. Lath and plaster should key into the frame and not terminate against the metal return.
   e. Diagonal reinforcement, 12″ x 18″ 2.5 lb. self-furring diamond mesh metal lath, should be applied at door frame corners.
   f. 16″ x 96″ ROCKLATH Plaster Base is recommended over door frames to eliminate butt joints.
   g. Adequate anchorage of the TRUSSTEEL Studs over the door head is necessary. Use of ¾″ channel bracing installed horizontally over the door and tied to all studs within 24″ each side of the frame is recommended.
4. To retain maximum sound isolation, the integrity of the partition or ceiling should not be voided by openings such as electrical outlets, medicine cabinets, vents, etc., so as to create sound leaks.

   Where mechanically suspended acoustical tile ceilings are used, partitions should extend from structural slab to structural slab, closing all openings.

   When sound isolation is a serious consideration use sand aggregate only, do not use lightweight aggregates.

   A TRUSSTEEL Stud Resilient Partition used as a sound barrier should have a neoprene gasket, a felt gasket or caulking under the floor and ceiling track to seal the voids between track and structural slabs.

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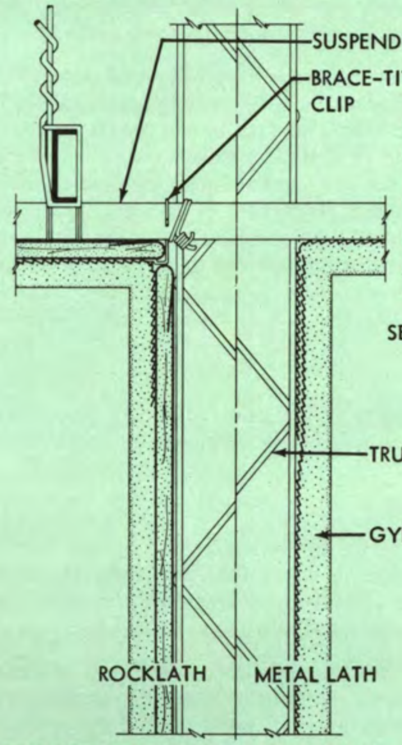
*T. M. Reg. U. S. Pat. Off.

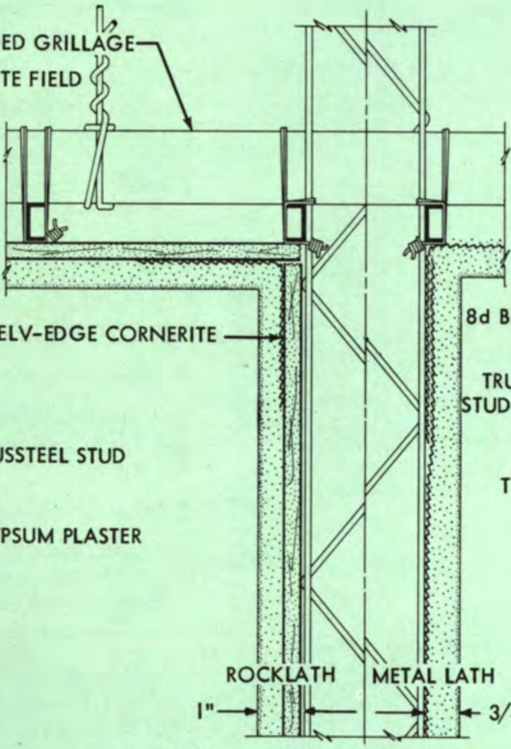
TRUSSTEEL*
STUD SYSTEM DETAILS

CEILING ATTACHMENTS

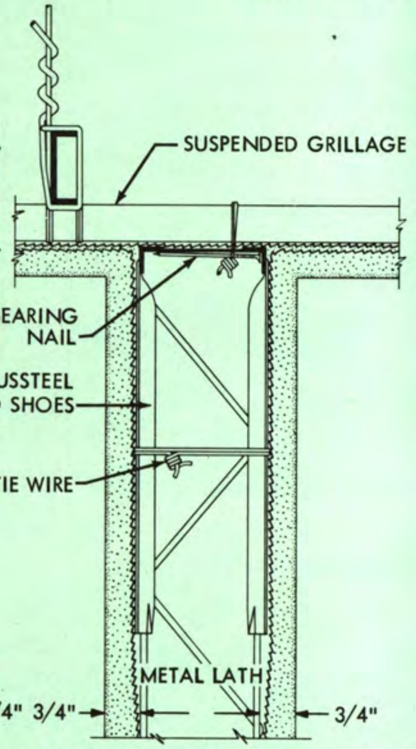
Scale: 3″ = 1′ – 0″



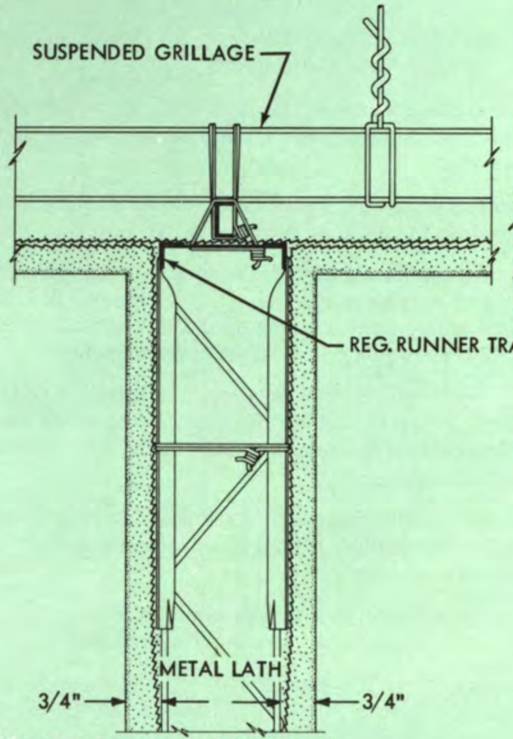
CROSS SECTION TRANSVERSE TO FURRING CHANNEL



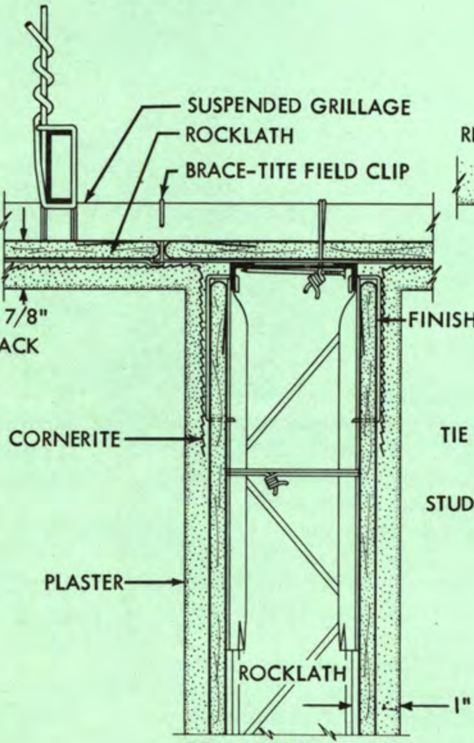
CROSS SECTION PARALLEL TO FURRING CHANNEL



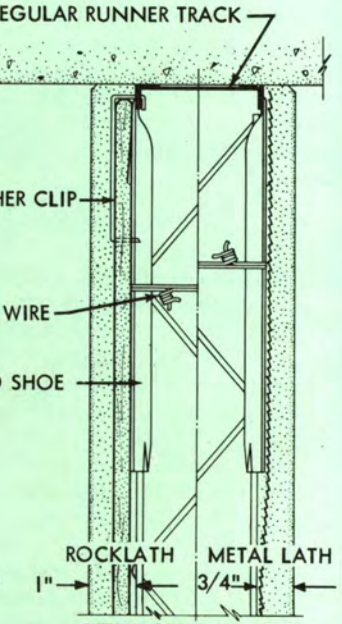
CROSS SECTION TRANSVERSE TO FURRING CHANNEL



CROSS SECTION PARALLEL TO FURRING CHANNEL



ATTACHMENT TO SUSPENDING CEILING

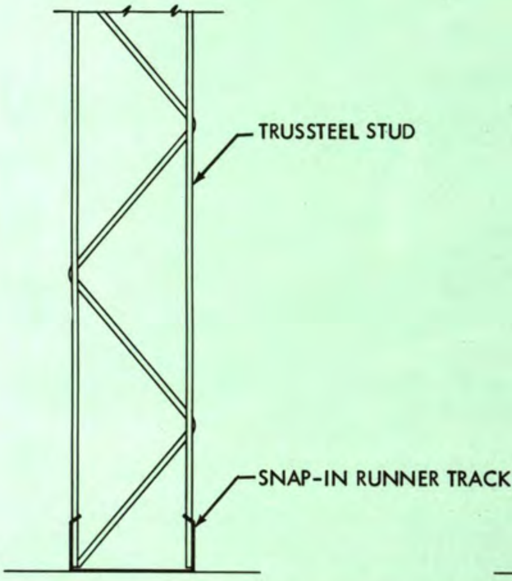


ATTACHMENT TO CONCRETE CEILING SLAB

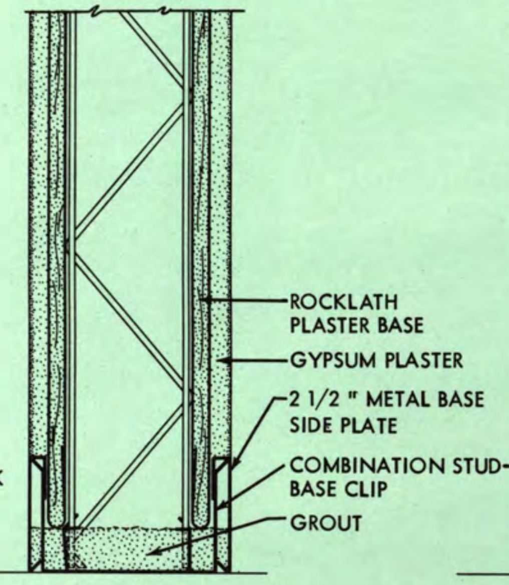
*T. M. Reg. U. S. Pat. Off.

FLOOR ATTACHMENT

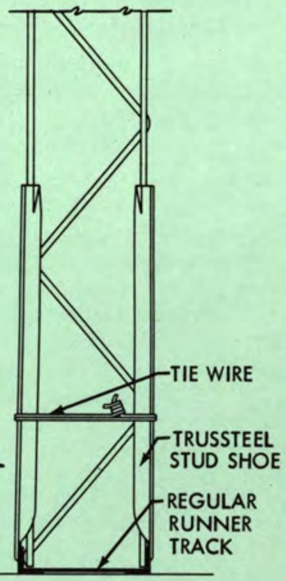
Scale: 3″ = 1′–0″



SNAP-IN RUNNER TRACK & STUD

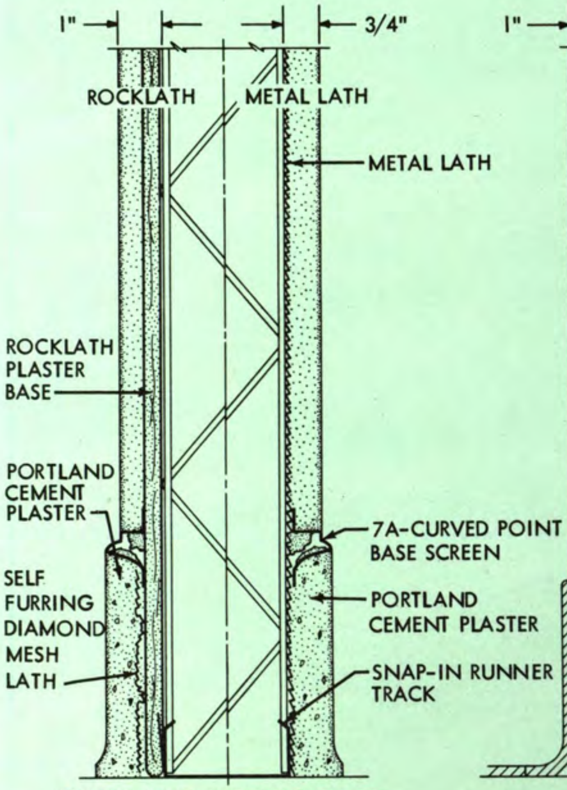


COMBINATION STUD BASE CLIP

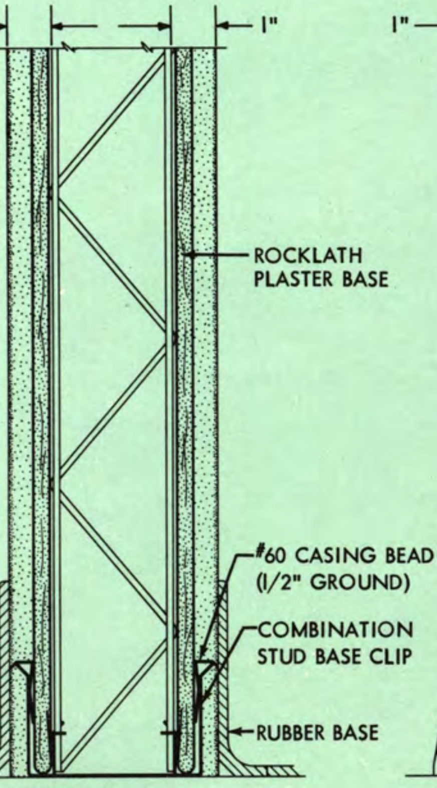


REGULAR RUNNER TRACK AND SHOES

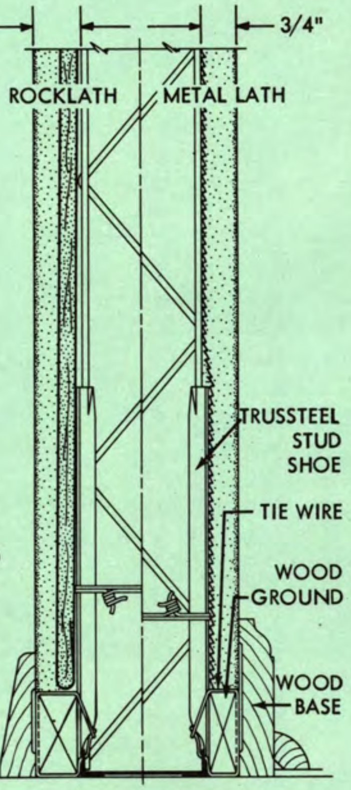
BASE DETAILS



PORTLAND CEMENT BASE



RUBBER BASE



WOOD BASE

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*T.M. Reg. U.S. Pat. Off.

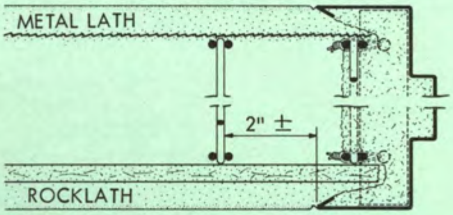
METAL DOOR FRAMES

Jamb Anchor inserts should be notched according to size of stud and welded in the frame as shown in the detail.

Grouting of the frame, after installation of the jamb stud is recommended in all cases. When heavy or over-sized doors are used (hospitals, etc.) or in instances where extreme abuse is anticipated, door frames must be grouted.

When lightweight hollow flush wood doors are used in conjunction with metal frames, the grouting is not mandatory providing the frame is detailed with the jamb anchor inserts welded to the jamb face and trim returns in the case of reveal type frames, or to flanges, in the case of flush type frames and the frame provides for the lath and basecoat plaster to be inserted into the frame and completely fill the flanges. The plaster should not die against the trim return reveal.

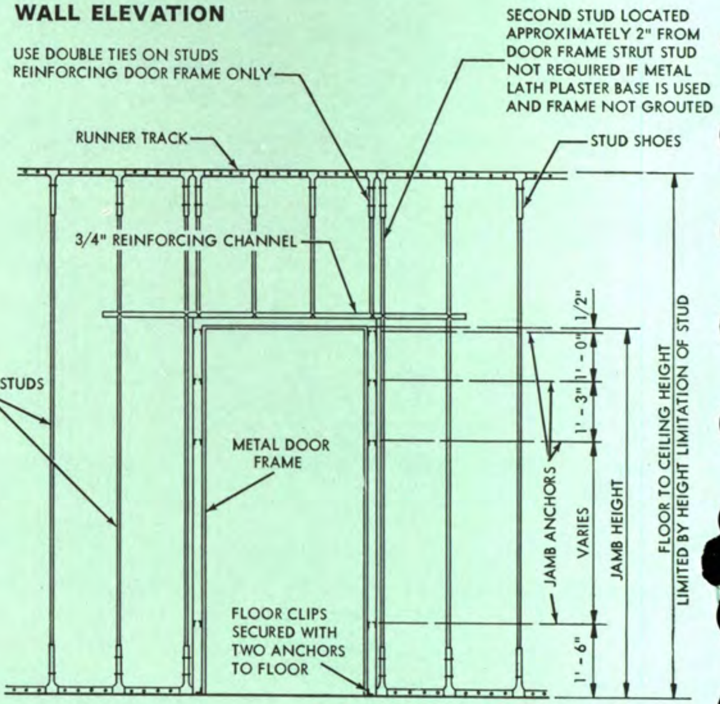
To prevent frame rotation, it is recommended that the floor clips be welded to the back of jamb face and to the flange returns, or that they be welded between the flanges, and then secured to the floor with two spaced anchors. Anchor insert clips if inverted will serve as floor clips.



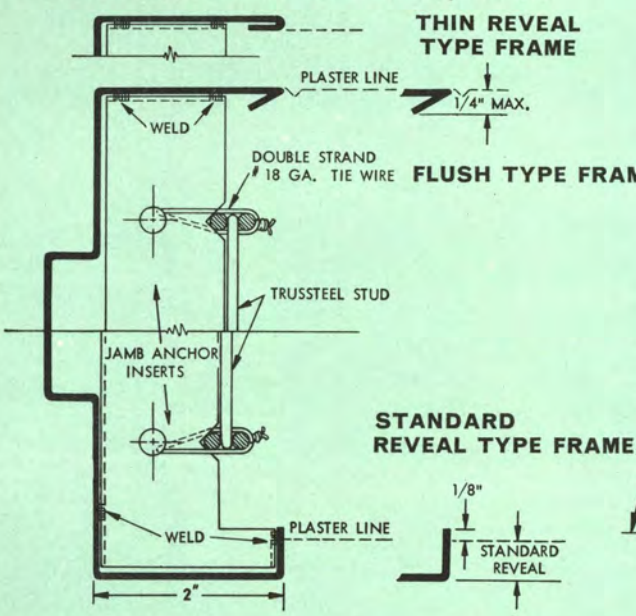
METAL DOOR FRAME / 3"=1'–0"

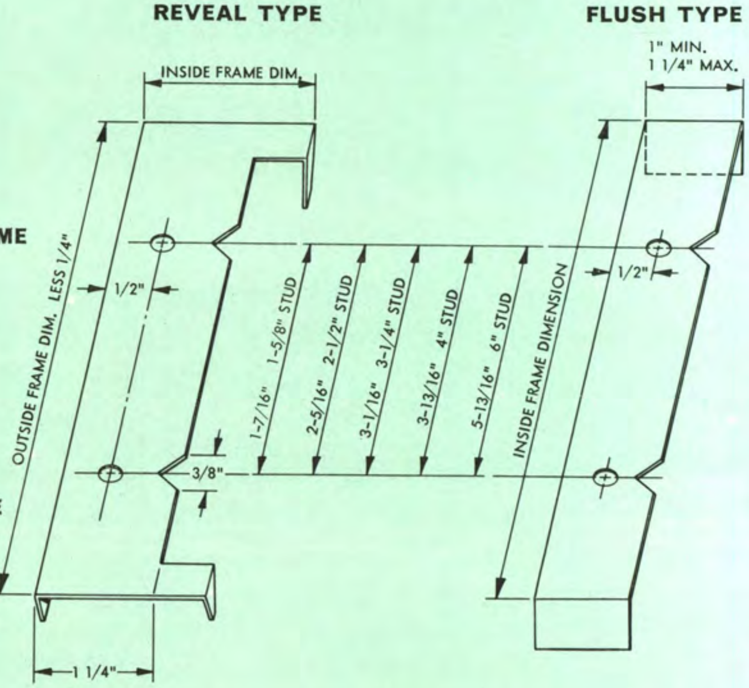
showing line of recommended grouting raked out along side of jamb anchor stud to permit lath & plaster to enter frame. If grouting is not specified, lath should carry well into frame and plaster forced beyond flange return.

WALL ELEVATION


USE DOUBLE TIES ON STUDS REINFORCING DOOR FRAME ONLY
SECOND STUD LOCATED APPROXIMATELY 2" FROM DOOR FRAME STRUT STUD NOT REQUIRED IF METAL LATH PLASTER BASE IS USED AND FRAME NOT GROUTED
RUNNER TRACK
STUD SHOES
3/4" REINFORCING CHANNEL
TRUSSTEEL STUDS
METAL DOOR FRAME
FLOOR CLIPS SECURED WITH TWO ANCHORS TO FLOOR
1/2"
1' - 0"
1' - 3"
VARIES
1' - 6"
JAMB ANCHORS
JAMB HEIGHT
FLOOR TO CEILING HEIGHT
LIMITED BY HEIGHT LIMITATION OF STUD

JAMB ANCHOR INSERTS/ half size





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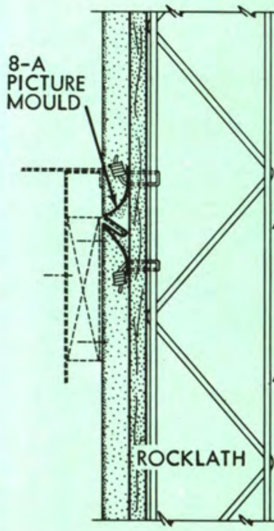
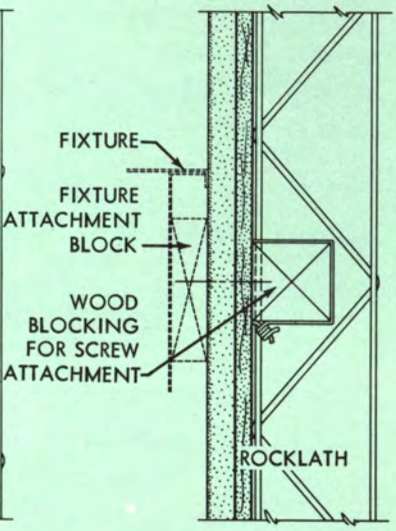
*T. M. Reg. U. S. Pat. Off.

MISCELLANEOUS DETAILS

LIGHT FIXTURE ATTACHMENTS

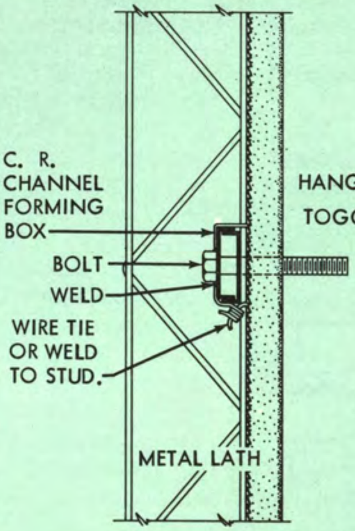


Picture mold supported 300 lbs. hung on 2 supports at 24″ o.c.



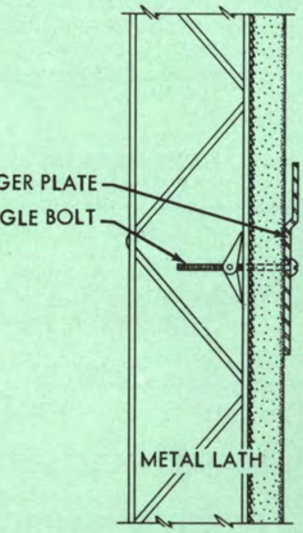
No test data available. Wood attachment blocking should be secured behind the stud channel.

HEAVY FIXTURE ATTACHMENT



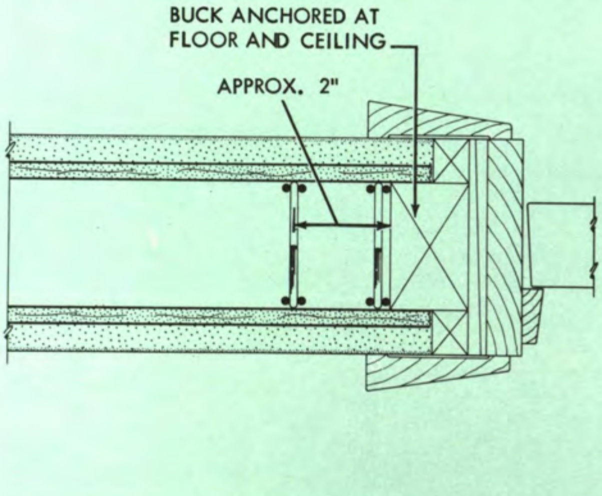
Bracket loaded to 300 lbs. No failure in partition.

LIGHT FIXTURE ATTACHMENT

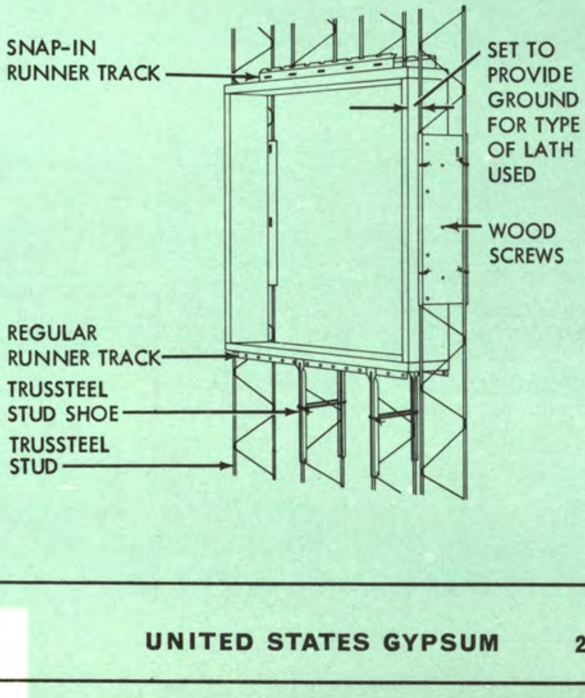


Toggle Bolt attachment carries 150 lbs. in direct pull, 150 lbs. in shear.

WOOD DOOR FRAME



BORROWED LIGHT OR CABINET FRAME



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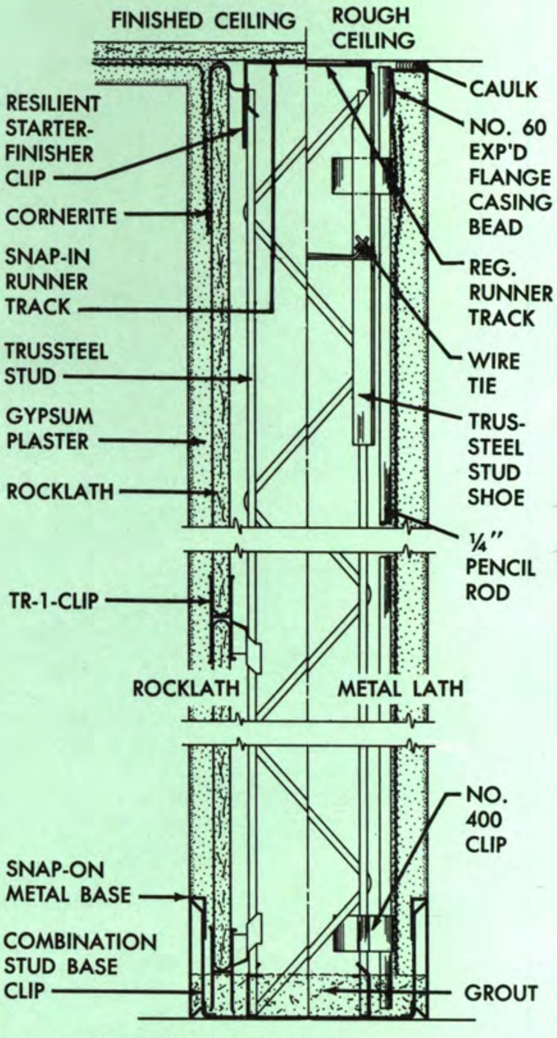
*T. M. Reg. U. S. Pat. Off.

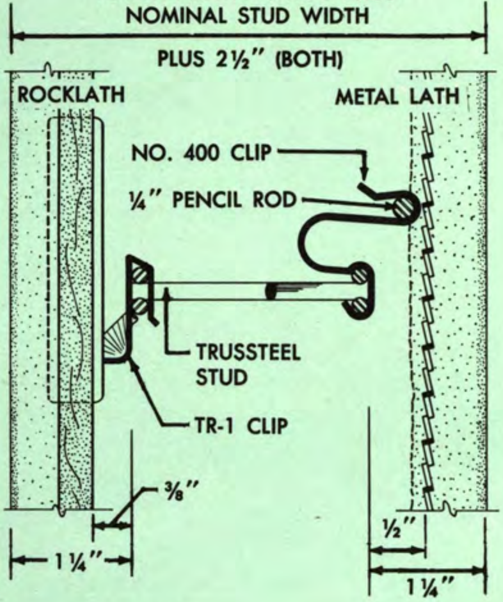
RESILIENT LATHING SYSTEMS

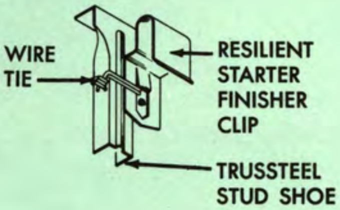
Resilient Attachment of ROCKLATH* Plaster Base & Metal Lath to TRUSSTEEL* Studs.

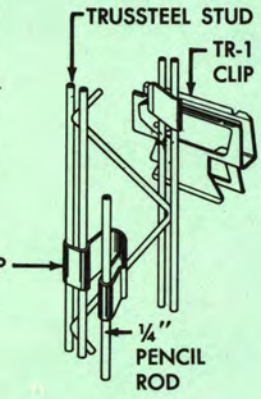
Resilient attachment of metal lath to TRUSSTEEL Studs using #400 Resilient Clips ¼" pencil rods and wire tying metal lath to pencil rods or resilient attachment of ROCKLATH to TRUSSTEEL Studs using the TR-1 Field Clips and R-SF Starter-Finisher Clips.



RESILIENT TRUSSTEEL STUD



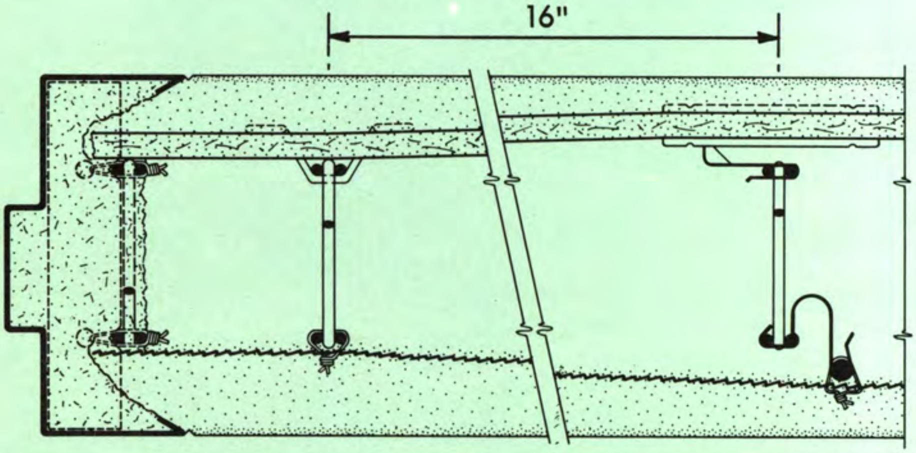




DOOR FRAME DETAIL

The Resilient Clip is eliminated on the two studs adjacent to the door frame and the lath is warped in which increases the plaster thickness.

Door frame must be grouted.

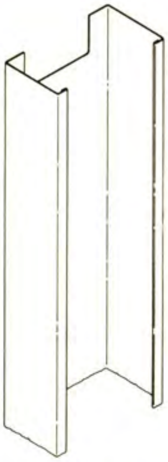


*T. M. Reg. U. S. Pat. Off.

L-P STUD PARTITION

The power driven, self-drilling screw affords rapid, uniform application of plaster bases.

A screw depth locator assures tight attachment and minimizes core fracture and face punctures.



L-P STUD

DESCRIPTION

The L-P Stud is formed from 26 gauge (.0227″) hot dipped galvanized steel. The L-P Stud is fabricated in three widths, 1⅝″, 2½″ and 3⅝″, and in lengths up to 16′-0″. A specially designed, power driven, self-drilling steel screw is used for the attachment of plaster bases to the stud. End joints of ROCKLATH Plaster Base may fall on studs, or between studs when supported by a BRIDJOINT B-1 clip.

FUNCTION AND UTILITY

This "metal lumber" provides a simple, easy to erect, incombustible, non-load bearing partition assembly. The stud construction allows easy vertical chaseways for pipes, conduit and ducts, with some limited horizontal chaseways through the cutouts of the web.

Fire Resistance—All components are incombustible, and a 1 hour fire rating has been obtained using the 2½″ L-P Stud, Perforated ROCKLATH* plaster base and ½″ of sanded plaster.

Sound Isolation—An average sound transmission loss of 46 decibels was obtained on a 2½″ L-P Stud, ROCKLATH and sanded plaster. See technical data pages 14 and 15.

Lightweight—The partition has a dead load of approximately 14 lbs. per sq. ft.

Strength—This partition with studs spaced 24 inches on center provides adequate strength for normal partition usage.

Economical—Low material costs, speed of erection and the versatility of the system provides a cost comparable or lower than wood frame construction.

LIMITATIONS

1. A non-load bearing partition.
2. Limiting heights of the partition must be reduced by 15 percent if a lightweight aggregate basecoat is used.
3. The L-P Stud is not recommended for a partition which is lathed and plastered on one side only.
4. The sound transmission loss average 46 decibels, however, the sound classification is 37.

PARTITION THICKNESS (1)

Stud Width	Section Modulus	ROCKLATH and Plaster	Dia. Mesh and Plaster	Maximum Partition Height	
				ROCKLATH	Metal Lath
				Stud 24″o.c.	Stud 24″o.c.
1⅝″	.074	3⅜″	3⅛″	10′-0″	10′-0″
2½″	.096	4¼″	4″	13′-6″	13′-6″
3⅝″	.123	5⅜″	5⅛″	17′-0″	17′-0″

(1) Reduce ceiling height by 15% if Perlite aggregate is used.

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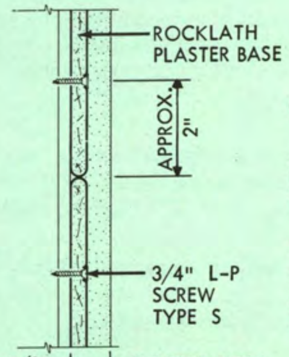
*T. M. Reg. U. S. Pat. Off.

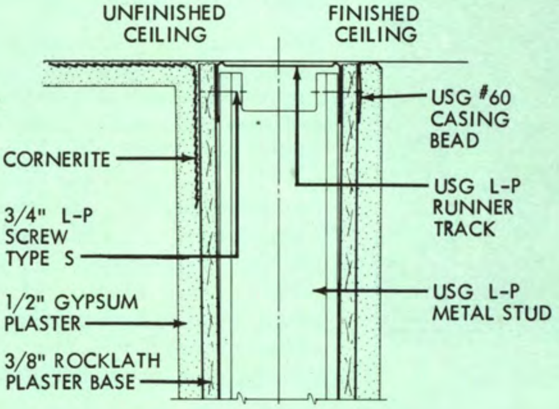
L-P ROCKLATH* PLASTER BASE PARTITION SYSTEM

CEILING ATTACHMENT

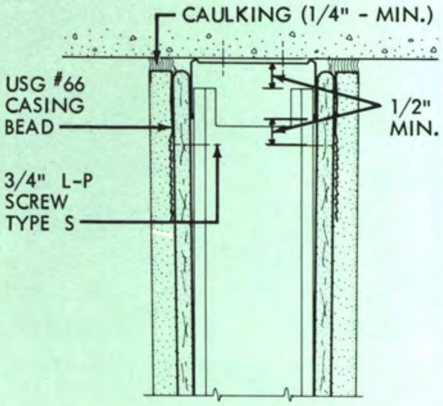
Scale: 3″ = 1′–0″



ROCKLATH EDGE JOINT

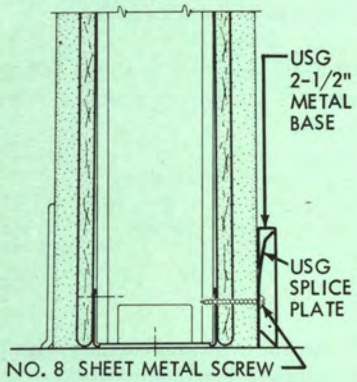


ATTACHMENT TO SUSPENDED CEILING

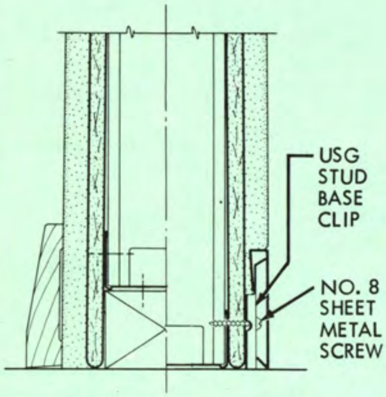


ATTACHMENT TO CONCRETE CEILING SLAB

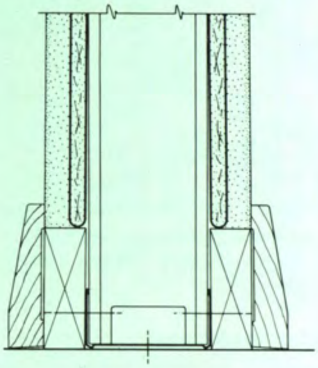
BASE DETAILS



RUBBER **METAL**

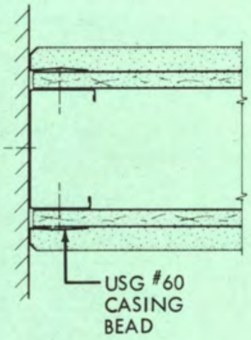


WOOD **METAL**

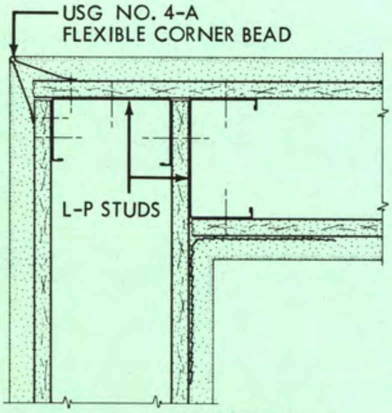


WOOD

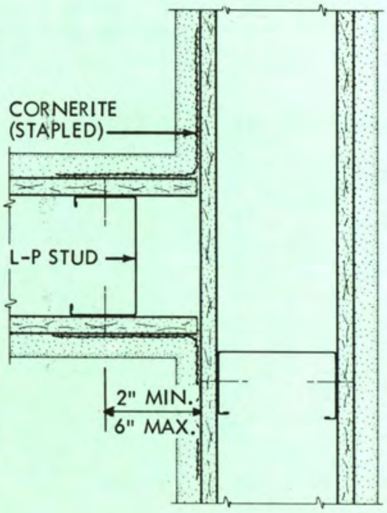
INTERSECTING PARTITIONS Scale: 3″ = 1′–0″



MASONRY WALL



INTERNAL; EXTERNAL CORNER



INTERSECTING L-P STUD, ROCKLATH

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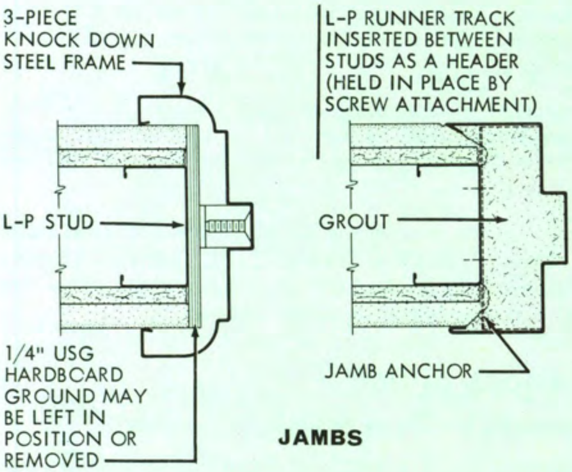
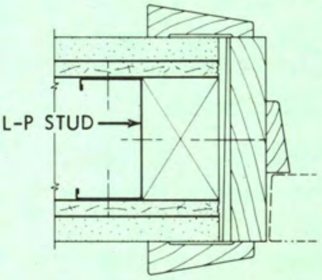
*T.M. Reg. U.S. Pat. Off.

DOOR FRAMES

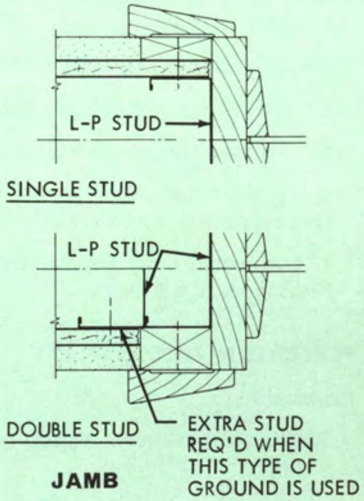
Scale: 3″ = 1′ – 0″



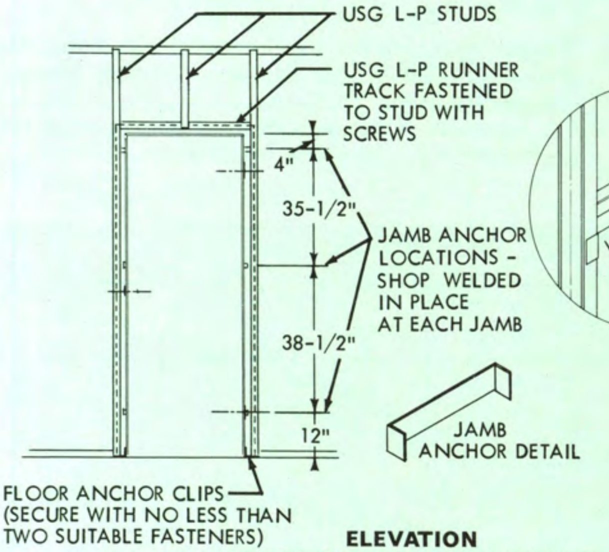
JAMBS



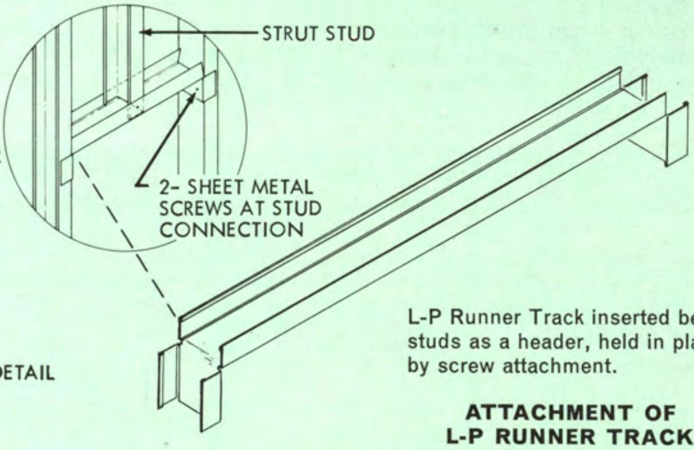
JAMB



JAMB



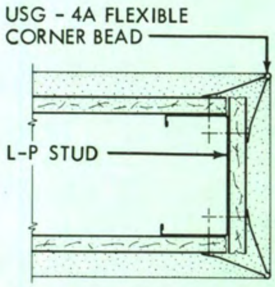
ELEVATION
CROSS SECTION THRU FRAME



L-P Runner Track inserted between studs as a header, held in place by screw attachment.

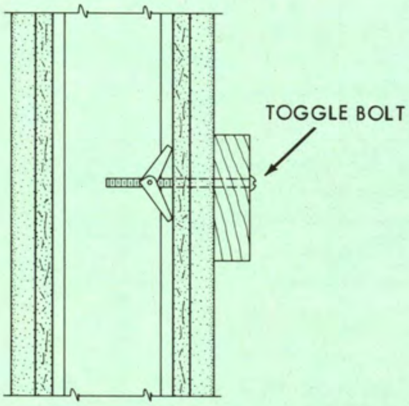
ATTACHMENT OF
L-P RUNNER TRACK
AS HEADER OR SILL

PARTITION TERMINAL



FIXTURE ATTACHMENT

Scale: 3″ = 1′ – 0″



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*T. M. Reg. U.S. Pat. Off.

SOLID PLASTER PARTITIONS

DESCRIPTION

The solid partition is a monolithic plaster construction adaptable to non-load bearing requirements with a minimum thickness of 2 inches. It is flexible in that additional strength, rigidity, and greater fire protection can be gained by increasing the plaster thickness.

There are four types of solid plaster partitions:

Channel Stud—Metal Lath. Requires no bracing.

⅜″ Riblath. Requires temporary bracing.

½″ Long Length ROCKLATH* Core. Requires temporary bracing during plastering operation.

1″ Laminated Long Length ROCKLATH Core. Requires no bracing up to 8′6″.

FUNCTION AND UTILITY

Economical

1. The solid plaster partition saves space and costly floor area.
2. The solid plaster partitions are accepted as the most economical fire resistant plaster partition assemblies.
3. In structural design the dead load for 2 inch partitions will vary from 9.5 lbs. to 18 lbs. per sq. ft. depending on the type of lath and plaster aggregate used.

Performance—Nationally accepted and used in schools, apartments and hotels as a functional and economical partition construction. Most major apartment house projects have used these assemblies with low maintenance costs and excellent performance.

Fire-Protection—Constructed of incombustible components, solid plaster partitions constructed as specified have established fire ratings of up to two hours. (See Fire Test Data on pages 12 & 13.)

Strength—Impact tests with a 240 ft. lb. load concentrated at the center of a 2″ x 8′-0″ x 16′-0″ panel failed to produce discernable cracking. Additional strength and rigidity are gained by increasing the partition thickness.

LIMITATIONS OF USE

1. Non-load bearing partitions only.
2. Limiting height is 10′0″ for partitions with ROCKLATH Plaster Base, 12′-0″ for Metal Lath.
3. Steel door frames and metal bases must be grouted with gypsum mortar.
4. Two inch partitions like all other partition constructions should be isolated from reinforced concrete framing columns and beams. The partition will not resist stresses transmitted to it by movement or deflection of the structural components of the building.

Partition Construction	Thickness	Limiting Ceiling Ht.	Comments
¾″ Cold Rolled Channels Diamond Mesh Lath & Plaster	2″	12′-0″	No limitation on length of this partition for heights under 12′-0″. Length between columns, or walls, shall not be greater than 2 times the partition height when the latter is 12′-0″ or more, nor greater than 1½ times height when the latter exceeds 16′-0″; nor greater than the height when it is 24′-0″ or more. Heights over 20′-0″ shall have horizontal girts every 6′-0″.
¾″ Cold Rolled Channels Diamond Mesh Lath & Plaster	2¼″	14′-0″	
¾″ Cold Rolled Channels Diamond Mesh Lath & Plaster	2½″	16′-0″	
1½″ C. R. Channel 475 Diamond Mesh Lath & Plaster	2¾″	18′-0″	
1½″ C. R. Channel 475 Diamond Mesh Lath & Plaster	3″	20′-0″	
1½″ C. R. Channel 475 Diamond Mesh Lath & Plaster	3½″	22′-0″	
⅜″ Riblath & Plaster	2″	10′-0″	Height of 10′-0″ limitation is based on the length of lath available.
½″ Long Length ROCKLATH and Plaster	2″	10′-0″	Limiting height of partition without bracing the girt 8′-6″.
1″ Long Length ROCKLATH and Plaster	2″	10′-0″	

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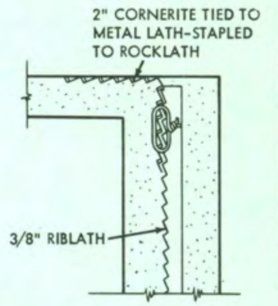
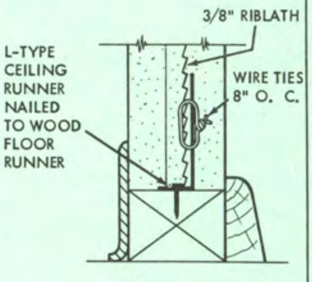
*T. M. Reg. U. S. Pat. Off.

SOLID METAL LATH PARTITIONS

Scale: 3″=1′-0″

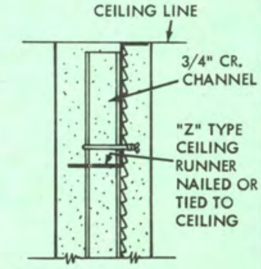
⅜″ RIBLATH-PLASTER



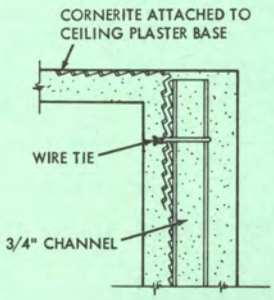


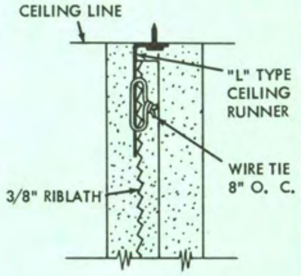
WOOD RUNNER

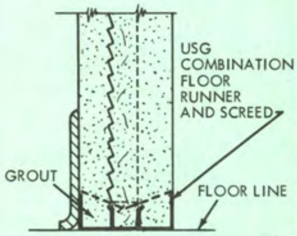
CHANNEL STUD-PLASTER

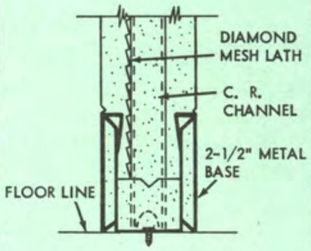


DIAMOND MESH LATH

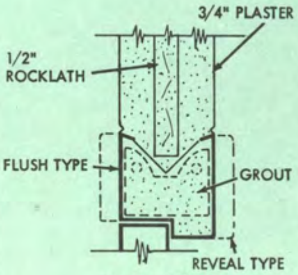








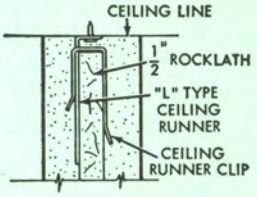
DOUBLE BASE CLIP



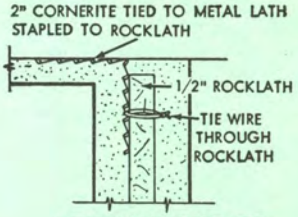
METAL DOOR FRAME

2″ SOLID PARTITION—½″ long length ROCKLATH* PLASTER BASE & PLASTER

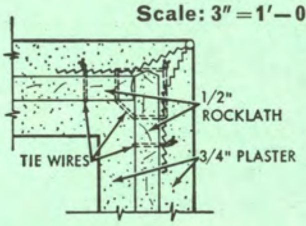
Scale: 3″=1′—0″



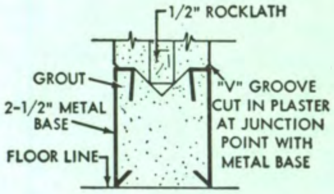
CEILING ATTACHMENT "L" RUNNER & CLIP


2" CORNERITE TIED TO METAL LATH STAPLED TO ROCKLATH
1/2" ROCKLATH
TIE WIRE THROUGH ROCKLATH

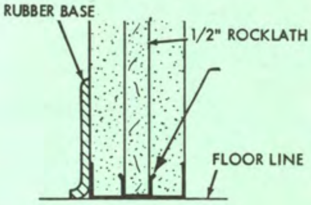
ATTACHMENT TO LATHED CEILING



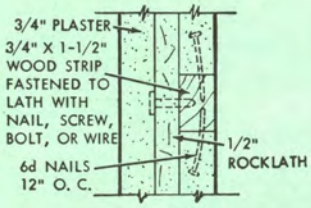
PARTITION CORNER



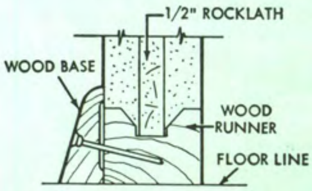
2½″ METAL BASE



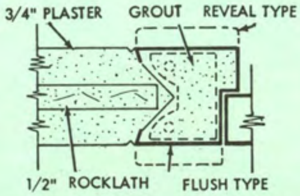
FLOOR RUNNER & SCREED


3/4" PLASTER
3/4" X 1-1/2" WOOD STRIP FASTENED TO LATH WITH NAIL, SCREW, BOLT, OR WIRE
6d NAILS 12" O. C.
1/2" ROCKLATH

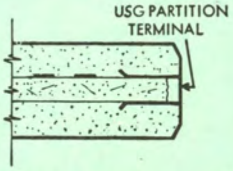
CABINET FIXTURE ATTACHMENT



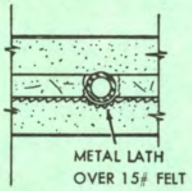
WOOD FLOOR RUNNER



METAL DOOR FRAME



METAL PARTITION END



RIGID CONDUIT

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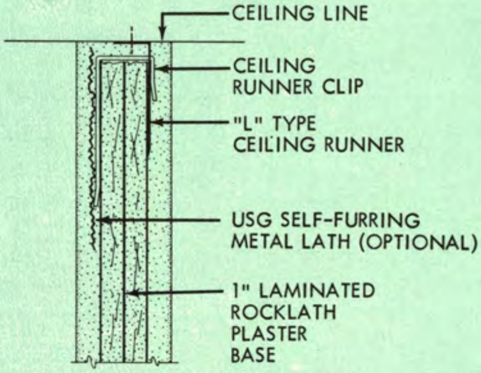
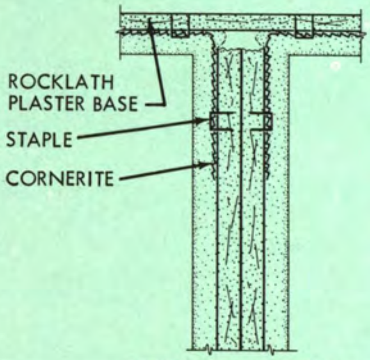
*T. M. Reg. U. S. Pat. Off.

2″ SOLID PARTITION—1″ laminated long length ROCKLATH* Plaster Base and plaster

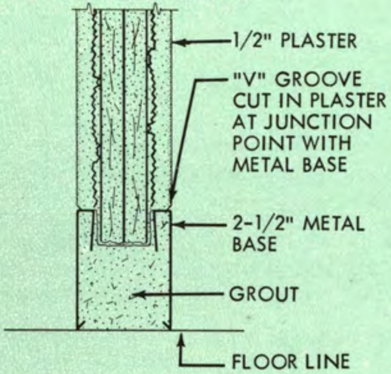
Scale: 3″=1′–0″


CEILING LINE
CEILING RUNNER CLIP
"L" TYPE CEILING RUNNER
USG SELF-FURRING METAL LATH (OPTIONAL)
1" LAMINATED ROCKLATH PLASTER BASE

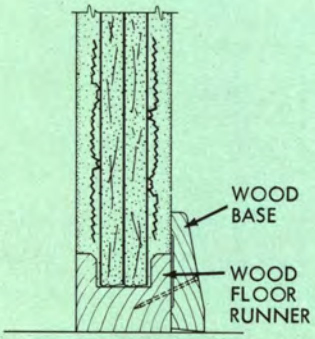
CEILING ATTACHMENT "L" RUNNER & CAP



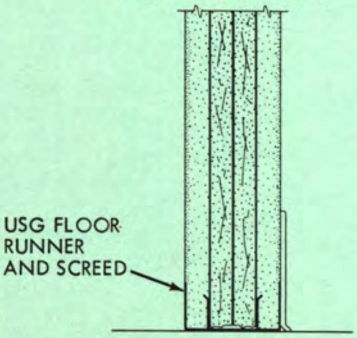
ATTACHMENT TO LATHED CEILING



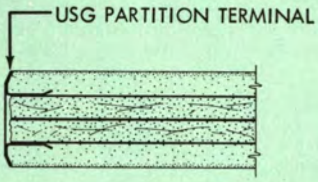
2½″ METAL BASE



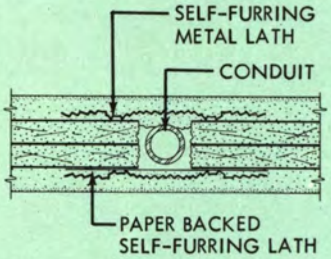
WOOD FLOOR RUNNER



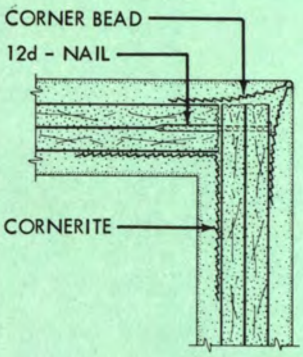
FLOOR RUNNER & SCREED



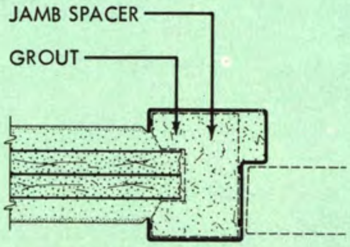
METAL PARTITION END



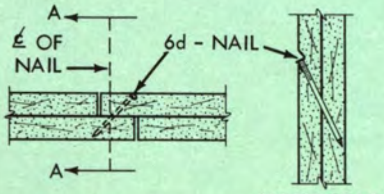
ELECTRICAL CONDUIT



PARTITION CORNER



METAL DOOR FRAME



SHIPLAP EDGE JOINT

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*T. M. Reg. U. S. Pat. Off.

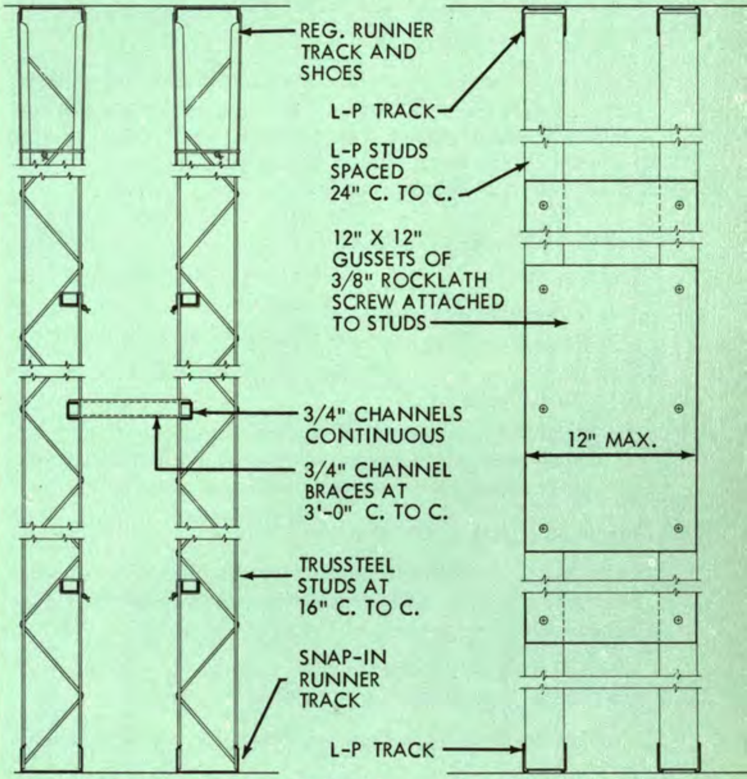
CORE WALL

DESCRIPTION

Core walls, as vertical shafts encasing the usual plumbing supply and waste lines, vent ducts and electrical conduits, require more free space than can be provided within the usual partition assembly.

Core walls are easily constructed using the elements of partitions, providing they are properly braced to compensate for the stress skin action of the one side. For example:

1. TRUSSTEEL* Studs may be used as a core wall by bracing the non lathed side of the studs with ¾″ continuous channel girts at the third points and tying the mid-grits together at 30″ on center with a ¾″ channel bracket.
2. L-P Stud core wall may be formed of two L-P Studs bracketed together using 12″ x 12″ gussets of ⅜″ ROCKLATH* plaster base. Gussets spaced not to exceed 36″ on center. Gussets securely attached to L-P Studs using three ¾″ L-P Screws. Limiting ceiling ht. 10′-0″.
3. Channel Stud Core Walls as detailed below.


REG. RUNNER TRACK AND SHOES
L-P TRACK
L-P STUDS SPACED 24" C. TO C.
12" X 12" GUSSETS OF 3/8" ROCKLATH SCREW ATTACHED TO STUDS
3/4" CHANNELS CONTINUOUS
12" MAX.
3/4" CHANNEL BRACES AT 3'-0" C. TO C.
TRUSSTEEL STUDS AT 16" C. TO C.
SNAP-IN RUNNER TRACK
L-P TRACK

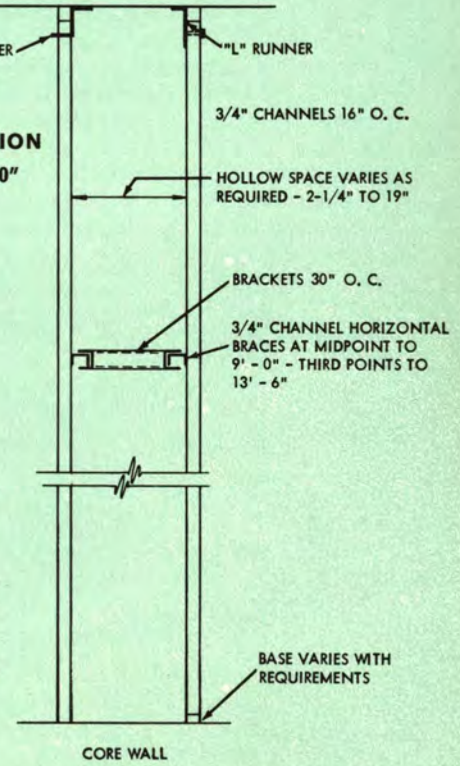
TRUSSTEEL STUD CORE WALL **L-P STUD CORE WALL**

CHANNEL STUD PARTITIONS (CORE WALLS)

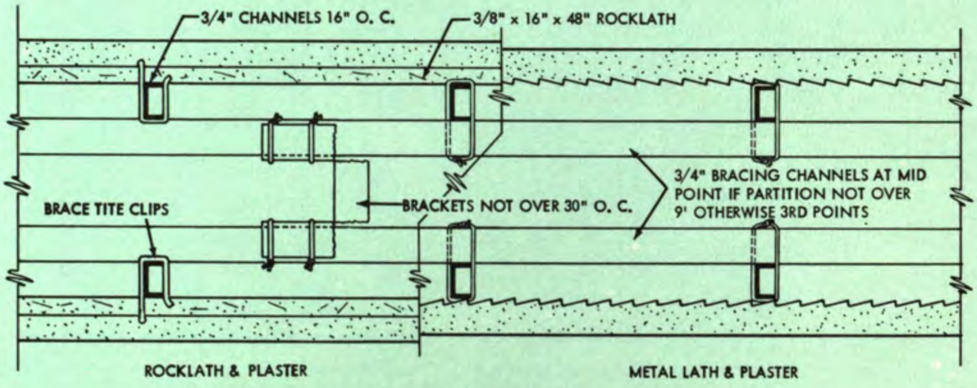
DETAILS / Scale as noted

The *channel stud partition*, frequently used as a core wall, is a versatile partition construction which provides almost unlimited space for mechanical installations within the partition. They consist of channel studs and either ⅜″ x 16″ x 48″ ROCKLATH or metal lath plaster bases, and may be designed to provide variable core widths.

VERTICAL SECTION
Scale: 1½″ = 1′ – 0″


"Z" RUNNER
"L" RUNNER
3/4" CHANNELS 16" O. C.
HOLLOW SPACE VARIES AS REQUIRED - 2-1/4" TO 19"
BRACKETS 30" O. C.
3/4" CHANNEL HORIZONTAL BRACES AT MIDPOINT TO 9' - 0" - THIRD POINTS TO 13' - 6"
BASE VARIES WITH REQUIREMENTS
CORE WALL

HORIZONTAL SECTION Scale: 3″ = 1′ – 0″


3/4" CHANNELS 16" O. C.
3/8" x 16" x 48" ROCKLATH
BRACE TITE CLIPS
BRACKETS NOT OVER 30" O. C.
3/4" BRACING CHANNELS AT MID POINT IF PARTITION NOT OVER 9' OTHERWISE 3RD POINTS
ROCKLATH & PLASTER
METAL LATH & PLASTER

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*T. M. Reg. U. S. Pat. Off.

EXTERIOR WALL FURRING

DESCRIPTION

It is our recommendation that all exterior masonry walls be furred. Asphaltic or Bituminous bonding agents are not recommended as a plaster base. Several systems are offered, each providing structural and economic advantages for special furring conditions.

FUNCTION AND UTILITY

Properly designed wall furring systems should provide:

1. Condensation control
2. Protection from moisture seepage
3. Insulation and vapor barrier (Insulating ROCKLATH* Plaster Base)
4. A degree of isolation from structural movement. Exterior walls are subjected constantly to changing dimensions due to temperature changes and wind loads.

LIMITATIONS

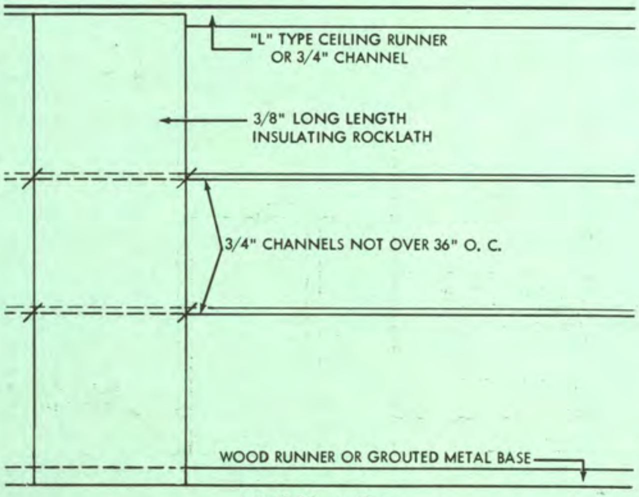
Long length Insulating ROCKLATH wall furring is not economical for cut-up wall areas containing a large percentage of openings.

Wood furring strips anchored directly to an exterior wall provide the least relief from structural movement.

Limiting height of Long Length Insulating ROCKLATH Furring System is 12′0″.

LONG LENGTH INSULATING ROCKLATH FURRING

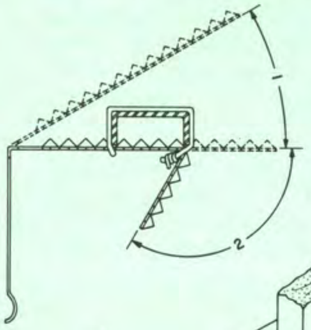
In this system, USG Adjustable Wall Furring Brackets, spaced not more than 36″ o.c., properly secured to the exterior wall, provide the support for ¾″ channels placed 36″ o.c. horizontally. Long Length Insulating ROCKLATH is attached to the channels by wire ties, and plaster is applied to ¾″ grounds. Regular 16″ x 48″ ROCKLATH may also be used, attached with BRACE-TITE* Clips. See Details for recommended floor and ceiling attachment. Height limitation for this system is 12′0″, unless special details are incorporated.

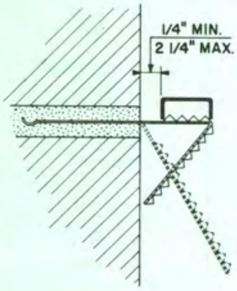

"L" TYPE CEILING RUNNER OR 3/4" CHANNEL
3/8" LONG LENGTH INSULATING ROCKLATH
3/4" CHANNELS NOT OVER 36" O. C.
WOOD RUNNER OR GROUTED METAL BASE

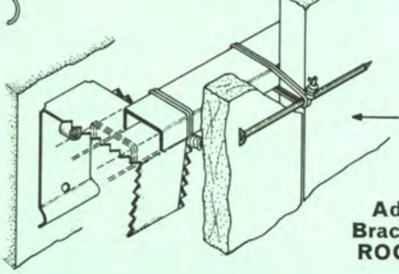
Wall Elevation

ADJUSTABLE WALL FURRING BRACKETS

1. Wall furring brackets shall be attached not more than 36″ o.c. horizontally and vertically.
2. After attachment, bend bracket to horizontal position.
3. Wire tie plumbed channel to bracket ¼″ min. from wall.
4. Bend excess of bracket down.

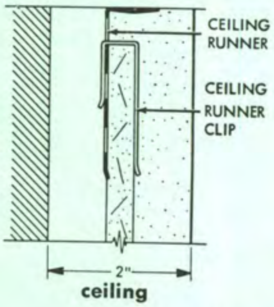




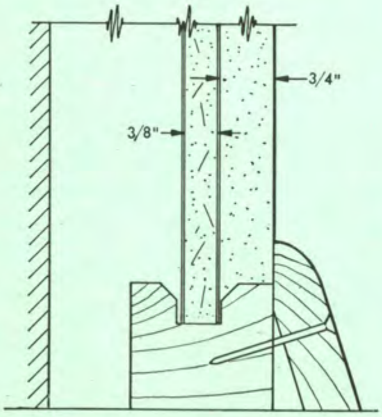


Adjustable Wall Furring Bracket and Attachment of ROCKLATH Plaster Base

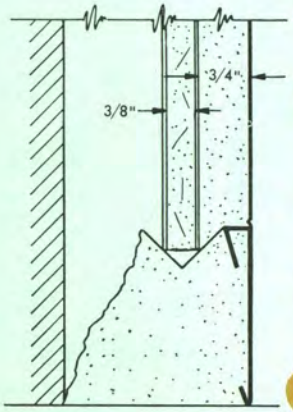
Scale:
Elevation: ½″ = 1′ – 0″
Details: No Scale



ceiling



Wood Runner & Wood Base Long Length ROCKLATH & Plaster



Metal Base—Long Length ROCKLATH & Plaster

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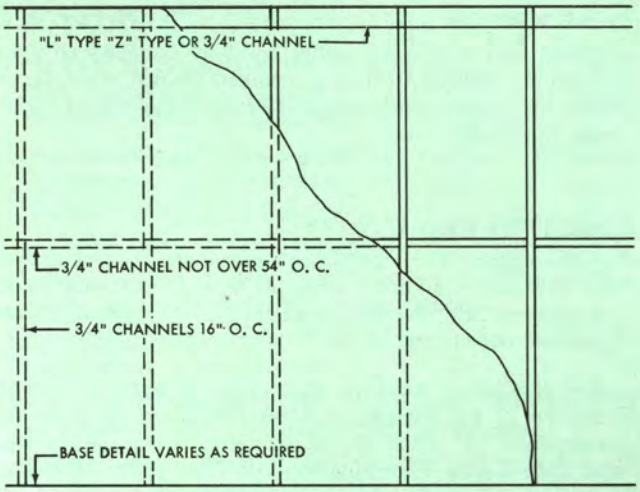
*T.M. Reg. U.S. Pat. Off.

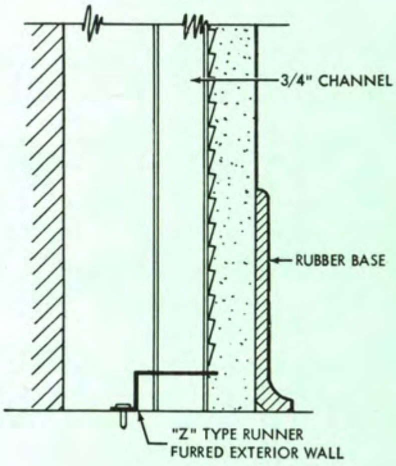
VERTICAL FURRING for Metal Lath

This construction consists of three horizontal ¾″ channels, located not more than 6″ from the floor and ceiling, and one at the midpoint between floor and ceiling, attached to the wall with USG Adjustable Wall Furring Brackets not more than 36″ o.c. Vertical channels are wire tied to these horizontal members, with spacing determined by the maximum allowable spacing of supports for the type of metal lath used. (See Technical Data page 16.) Metal lath is wire tied on the vertical channels and plastered to ¾″ grounds. If height exceeds 10′0″ using ¾″ channels, additional horizontal channels are required, spaced not more than 4′6″ o.c.

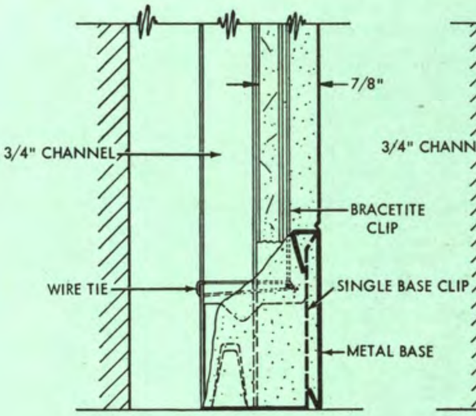
Scale:
Elevation: ½″ = 1′ – 0″
Details: No Scale


"L" TYPE "Z" TYPE OR 3/4" CHANNEL
3/4" CHANNEL NOT OVER 54" O. C.
3/4" CHANNELS 16" O. C.
BASE DETAIL VARIES AS REQUIRED

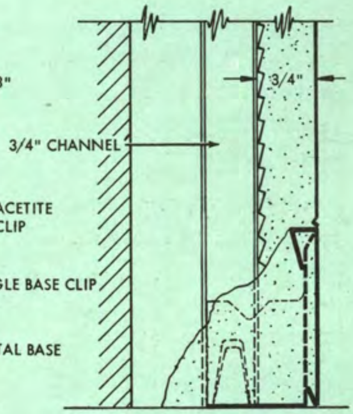
wall elevation



rubber base



ROCKLATH & plaster



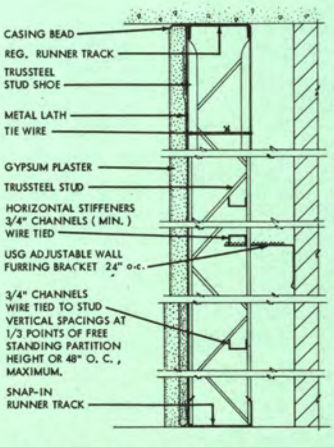
metal lath & plaster

VERTICAL FURRING with TRUSSTEEL* Studs

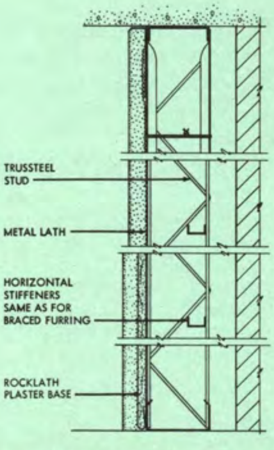
TRUSSTEEL Studs may be used in lieu of horizontal and vertical channels for exterior wall furring.

TRUSSTEEL Stud Size	MAXIMUM HEIGHT⁽¹⁾	
	Braced Furring	Free Standing Furring
1⅝″	9′	6′
2½″	15′	10′
3¼″	21′	14′
4″	22′	15′
6″	26′	17′

(1) Based on 16″ spacing between studs.


CASING BEAD
REG. RUNNER TRACK
TRUSSTEEL STUD SHOE
METAL LATH
TIE WIRE
GYPSUM PLASTER
TRUSSTEEL STUD
HORIZONTAL STIFFENERS 3/4" CHANNELS (MIN.) WIRE TIED
USG ADJUSTABLE WALL FURRING BRACKET 24" o-c.
3/4" CHANNELS WIRE TIED TO STUD VERTICAL SPACINGS AT 1/3 POINTS OF FREE STANDING PARTITION HEIGHT OR 48" O. C., MAXIMUM.
SNAP-IN RUNNER TRACK

BRACED FURRING



FREE STANDING FURRING

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*T. M. Reg. U. S. Pat. Off.

RESILIENT CLIPS SYSTEM

DESCRIPTION

Resilient lathing systems utilize specially designed clips to connect the lath and framing members, which allow for a degree of independent movement between the plaster membrane and the structure.

FUNCTION AND UTILITY

Fire-Protection—The component parts are incombustible. The gypsum, in addition, calcines slowly, retarding flame and resisting heat transfer by giving up its chemically combined water of crystallization.

Sound Insulation—Resilient attachment provides a marked reduction in the transfer of air-borne sound through the construction by virtue of the damping action of resilient clips. (See Sound Transmission Loss Data pages 13 & 14.)

Crack Resistance—Resilient clip attachment markedly reduces the possible transmission of stresses due to structural movement to the lath and plaster membrane, thereby reducing the incidence of cracking.

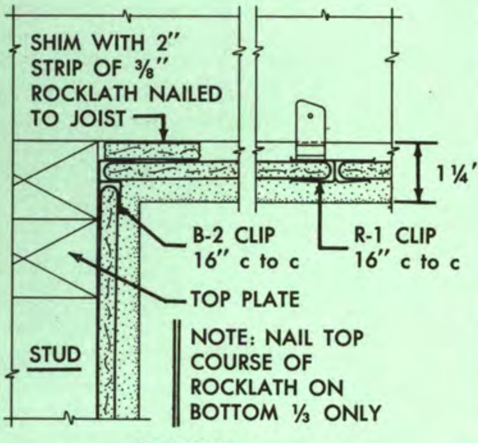
Economy—The cost of resilient clips is small compared to the cost of alternate methods of achieving the desired sound isolation and crack-resistant characteristics. Increasing the mass of systems, or the use of staggered studs in partitions, are costly methods of improving sound transmission loss characteristics, and usually do not provide the additional crack-resistance of resilient clips.

LIMITATIONS OF USE

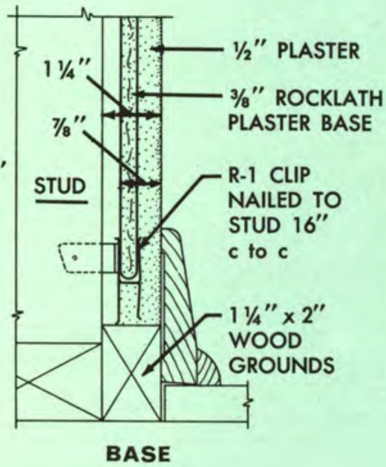
Three coat plastering is required on resiliently attached ROCKLATH ceilings. Perforated ROCKLATH is not recommended for resilient attachment.

Resilient ROCKLATH* Plaster Base Attachment Systems

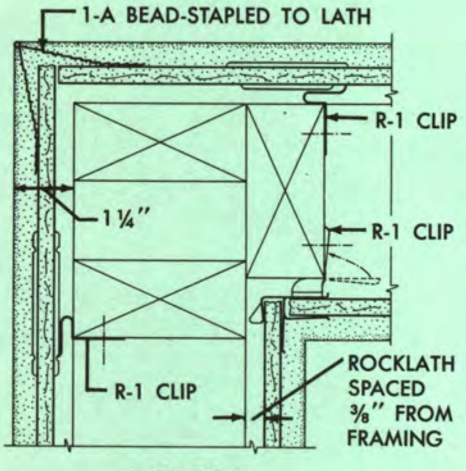
Resilient attachment of ROCKLATH to wood framing, using R-1 and R-2 Resilient Clips, and B-1 BRIDJOINT* Clips.


SHIM WITH 2" STRIP OF ⅜" ROCKLATH NAILED TO JOIST
1¼"
B-2 CLIP 16" c to c
R-1 CLIP 16" c to c
TOP PLATE
STUD
NOTE: NAIL TOP COURSE OF ROCKLATH ON BOTTOM ⅓ ONLY

CEILING



BASE

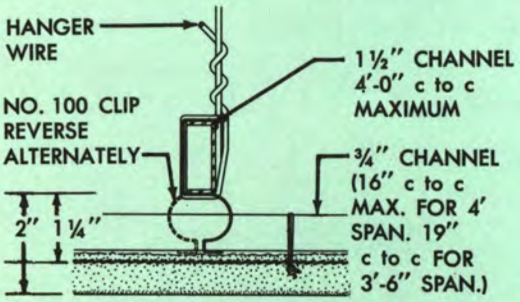


CORNER

RESILIENT METAL LATH ATTACHMENT

Resilient attachment of ¾" channel cross furring to 1½" channel main runners in furred or suspended ceiling construction, using #100 Resilient Clips.

Note: For Resilient TRUSSTEEL Stud Partition. See page 28. For Resilient PYROBAR Partition. See page 20.


HANGER WIRE
NO. 100 CLIP REVERSE ALTERNATELY
1½" CHANNEL 4'-0" c to c MAXIMUM
¾" CHANNEL (16" c to c MAX. FOR 4' SPAN. 19" c to c FOR 3'-6" SPAN.)
2"
1¼"

CEILING

*T. M. Reg. U. S. Pat. Off.

SUSPENDED CEILINGS

DESCRIPTION

Suspended ceilings consist of three basic elements:

1. Light channel grillage, properly supported, rigid and of sufficient strength to carry to dead load without deflection.
2. A lath plaster base securely attached to the grillage on which the plaster may be applied.
3. The plaster consisting of the basecoat and finish coat.

FUNCTION AND UTILITY

Fire-Protection—Constructed of incombustible component parts, it is possible to design for established fire resistance ratings of one to four hours by varying grillage spacing, type of lath and attachment, type of aggregate, proportioning of gypsum plaster, and plaster thickness.

Economy—Lightweight. The established fire ratings can reduce annual insurance premiums.

Utility—The fireproof membrane serves to conceal structural and mechanical elements, and provides the base for final decoration.

Insulation and Vapor Barrier—Where insulation and vapor barriers are desired, use of insulating (foil back) ROCKLATH* plaster base will provide an effective vapor barrier and increase the overall "U" factor of the roof-ceiling assembly.

Perforated ROCKLATH—Diagonal Reinforcing

LIMITATIONS

1. Main runners and cross furring members should not be let into masonry walls or partitions, and clearance of at least 1″ must be provided at each end of the channels.
2. All recommended spacings of hanger wires and channels are maximum and should not be exceeded.
3. BRACE-TITE Field Clips are designed for use with standard ¾″ cold rolled channels having ½″ legs (Minimum).
4. Use three coat plastering method when machine application is used over Perforated ROCKLATH.
5. In ceiling constructions the following precautions are necessary for good performance:
   a. Isolate the ceiling from exterior walls, columns and interior partitions or other vertical penetrations.
   b. Break the continuity of grillage, lath and plaster where large ceiling expanses occur by control joints or other means. The maximum recommended area within control joints is 2400 square feet, with joints spaced no more than 60 feet apart in either direction.
   c. Where contact, furred or suspended ceilings occur under roof construction, the plenum should be vented according to recommended engineering practice.
   d. The grillage recommendations are for support of the lath and plaster dead loads and are not designed to support concentrated loads of mechanical equipment or workmen, particularly after the plaster has been applied. Independently supported cat walks and equipment platforms should be provided.

BRACE-TITE* Lathing System

DESCRIPTIONS:

BRACE-TITE Lathing System is a method of attaching ROCKLATH Plaster Base to conventional suspended ceiling grillage.

ADVANTAGES:

Structural—The rigid ROCKLATH provides a bracing diaphragm.

Crack-Resistant—The BRACE-TITE Clips while supporting the plaster base firmly against the channels, isolate the plaster membrane from minor movements of the grillage.

Fire-Ratings

1 hour—Channels 16″ on center, Perforated ROCKLATH, ⅝″ perlite plaster

2 hour—Channels 16″ on center, Perforated ROCKLATH, 14 gauge diagonal wire, ½″ perlite plaster

3 hour—Channels 12″ on center, Perforated ROCKLATH, 14 gauge diagonal wire, ½″ perlite plaster

4 hour—Channels 12″ on center, Perforated ROCKLATH, BRACE-TITE and BRIDJOINT clips, 20-gauge galvanized 1″ hexagonal wire mesh, 1″ perlite plaster.

Economical—Saves scratch coat of plaster and labor of application.

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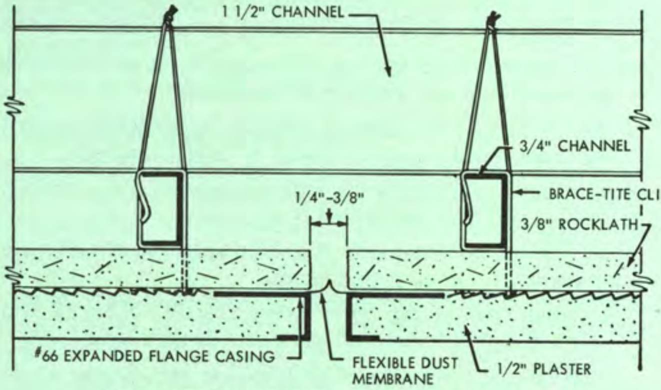
*T. M. Reg. U. S. Pat. Off.

SUSPENDED CEILING DETAILS for ROCKLATH* Plaster Base or Metal Lath

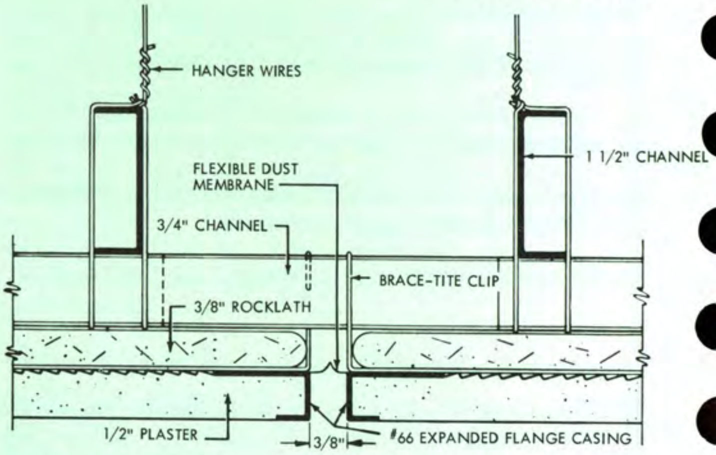
STEEL BEAM AND COLUMN FIREPROOFING

ROCKLATH—BRACE-TITE* Attachment

Scale: Half Size

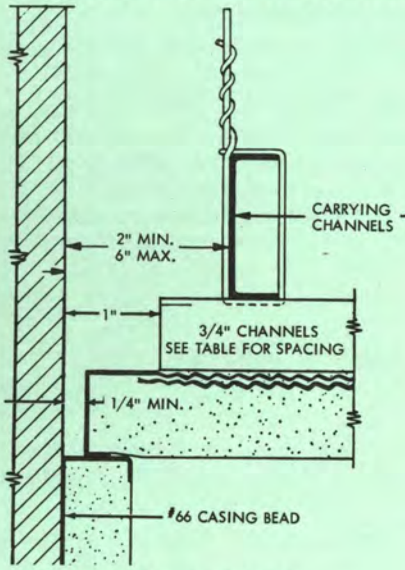


EXPANSION JOINT parallel to ¾" channels

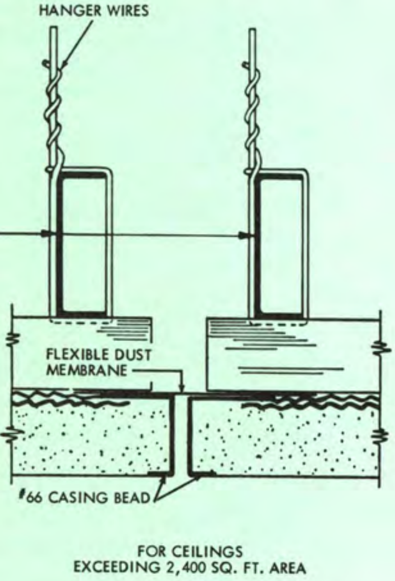


EXPANSION JOINT perpendicular to ¾" channels

METAL LATH ATTACHMENT

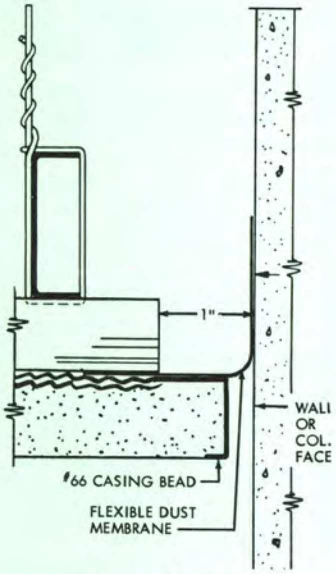


PERIMETER ISOLATION



FOR CEILINGS EXCEEDING 2,400 SQ. FT. AREA

CONTROL JOINT



ISOLATION FROM WALLS OR COLUMNS

STEEL BEAM AND COLUMN FIREPROOFING

DESCRIPTION

Membrane fireproofing of gypsum plasters provides lightweight, thin, compact fire-protection and finished surfaces for structural framing members. The protection afforded in hours of fire resistance depends on the type of base, its method of attachment and spacing, proportioning of aggregate to gypsum plaster and plaster thickness. See pages 41 and 42.

FUNCTION AND UTILITY

Fire-Protection—The component parts are incombustible. The gypsum, in addition, calcines slowly, retarding flame and resisting heat transfer by giving up its chemically combined water of crystallization. The aggregate acts only as a bulking agent for the plaster and some types, as an insulating material against heat transfer. For example, lightweight aggregates provide more fire resistance than sand.

Economy—The thin lightweight plaster assembly reduces the dead load and lost floor area. The plaster surface provides the base for final decoration. Increased fire-protection permits lower insurance premiums.

LIMITATIONS OF USE

To resist impact, provide adequate protection at column corners subject to damage from cartage equipment, etc.

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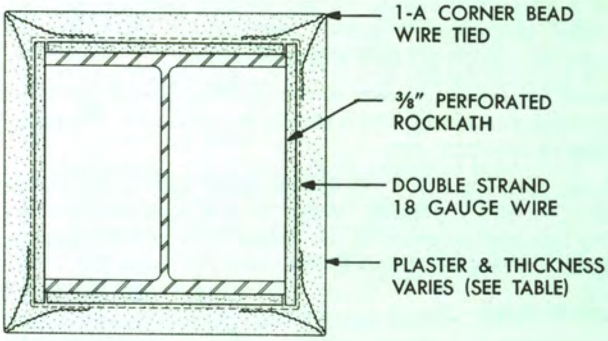
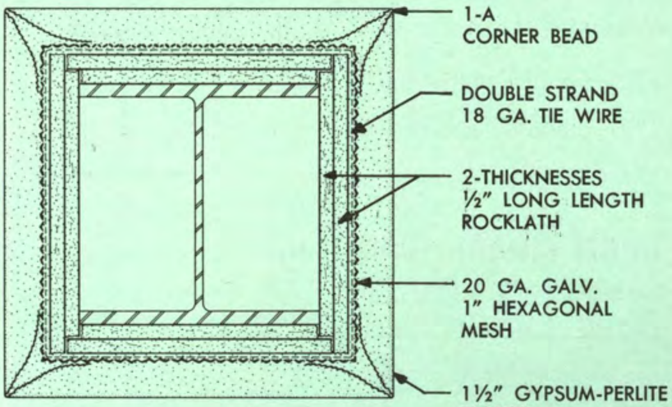
STEEL BEAM AND COLUMN FIREPROOFING

COLUMN FIREPROOFING ROCKLATH* Plaster Base

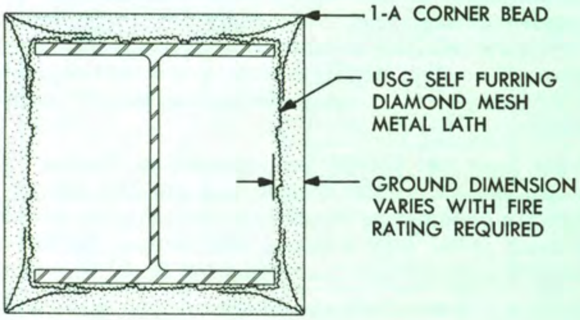

1-A CORNER BEAD WIRE TIED
⅜" PERFORATED ROCKLATH
DOUBLE STRAND 18 GAUGE WIRE
PLASTER & THICKNESS VARIES (SEE TABLE)

1, 1½, 2 & 3 hr.

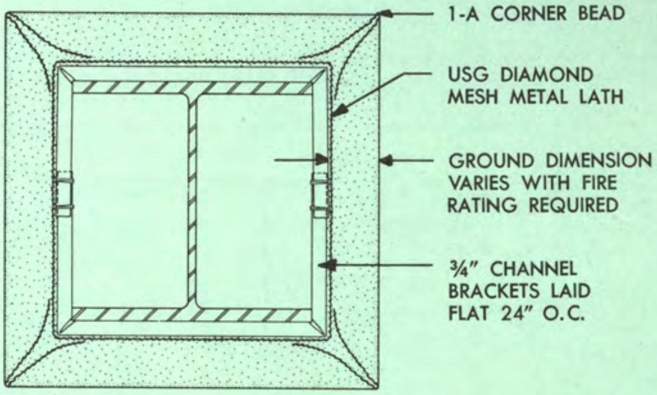

1-A CORNER BEAD
DOUBLE STRAND 18 GA. TIE WIRE
2-THICKNESSES ½" LONG LENGTH ROCKLATH
20 GA. GALV. 1" HEXAGONAL MESH
1½" GYPSUM-PERLITE PLASTER

4 hr.

COLUMN FIREPROOFING Metal Lath

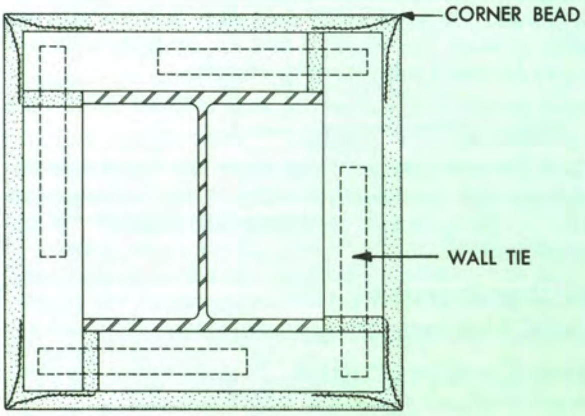

1-A CORNER BEAD
USG SELF FURRING DIAMOND MESH METAL LATH
GROUND DIMENSION VARIES WITH FIRE RATING REQUIRED

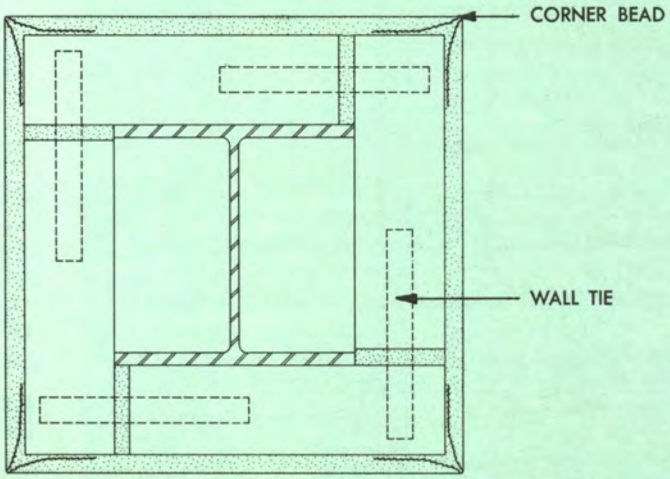
1-2-3-4 hour
COLUMN FURRING


1-A CORNER BEAD
USG DIAMOND MESH METAL LATH
GROUND DIMENSION VARIES WITH FIRE RATING REQUIRED
¾" CHANNEL BRACKETS LAID FLAT 24" O.C.

4 hr. (ALT. METHOD)

COLUMN FIREPROOFING PYROBAR* Tile





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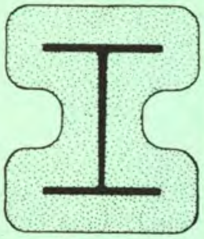
STEEL BEAM & COLUMN FIREPROOFING

COLUMN FIREPROOFING FIRECODE* Plaster

4 HOUR COLUMN

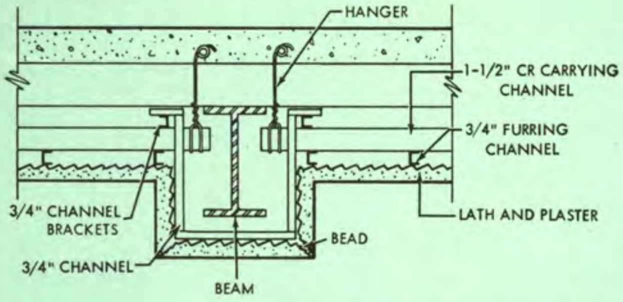
3 hr.—Contour application 2⅛″

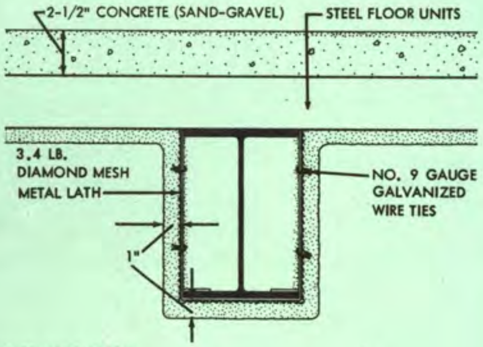
4 hr.—Contour application 2½″



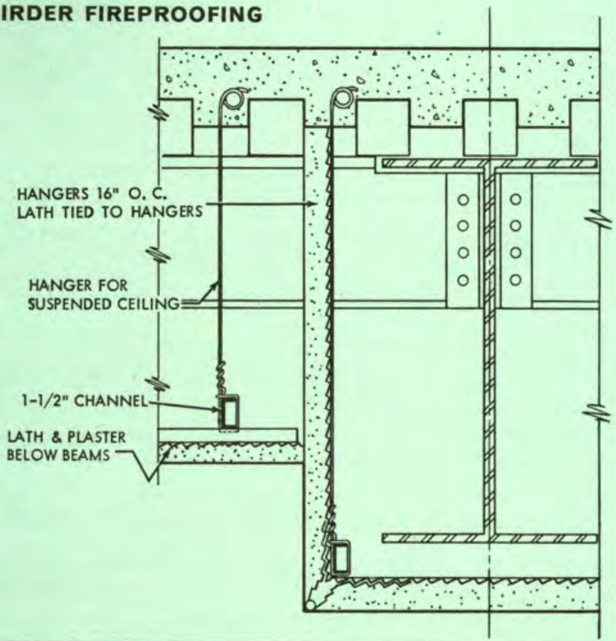
BEAM FIREPROOFING Metal Lath

CAGED BEAM & FIRECODE PLASTER




2-1/2" CONCRETE (SAND-GRAVEL)
STEEL FLOOR UNITS
3.4 LB. DIAMOND MESH METAL LATH
NO. 9 GAUGE GALVANIZED WIRE TIES
1"

GIRDER FIREPROOFING


HANGERS 16" O. C. LATH TIED TO HANGERS
HANGER FOR SUSPENDED CEILING
1-1/2" CHANNEL
LATH & PLASTER BELOW BEAMS

LATHING SPECIFICATIONS

NOTE TO THE ARCHITECT

The following comments and recommendations cover the basic specifications for the normal job requirements, and are intended as minimum guide specifications which can be adapted to specific projects and conditions.

Beyond the erection details of the various systems are other related job conditions which should be covered in the plans, details, or specifications.

It is not intended that these specifications and related details shall cover every possible design or job condition but are rather intended to assist in the preparation of specifications applicable to a given project.

IMPORTANT

1. Where lath and plaster ceilings occur under roof constructions, it is *recommended* that the plenum space be ventilated. Ventilation with or without vapor barrier and insulation shall be designed in accordance with accepted engineering practice.
2. Construction moisture must be removed from within the building by ventilation and not just moved around by fans used for drying surfaces.
3. Lath and plaster surfaces will not resist the stresses imposed by structural movement, it is recommended in the design of structures that care be taken to isolate lath and plaster surfaces from all structural elements, or that control joints be provided where lath and plaster surfaces abut structural members.
4. Plaster bases and plasters are subjected to dimensional changes due to thermal changes and moisture content. Expansive ceiling areas should have control joints spaced 50′-0″ on center each way and long runs of partitions should be provided with control joints at 30′-0″ on center.
5. Holes cut in a thin diaphragm of lath and plaster, such as door frames, recessed lights, etc., cause a redistribution of stresses within the plaster diaphragm. All openings should be reinforced, particularly at corner angles.
6. Masonry walls to be plastered should be constructed with the same care as if they were to be left exposed. Lintels over all openings, masonry bond, full bed and end joints, etc.
7. Steel Door Frames shall be fabricated and anchored so that on impact the jambs will not twist and the trim returns will not vibrate. The jamb width shall allow both the lath and plaster to enter into the jamb and *not die* against the trim return. All steel frames shall be grouted.

   Where oversize heavy doors are used, the steel frames must be grouted and door closures installed.
8. It is in the best interest of the owner and his architect to require a unit responsibility, wherein all the component parts of the partition or ceiling are supplied by one manufacturer.

SPECIFICATIONS

1.1 SCOPE—Outline the extent of work included.

1.2 GENERAL CONDITIONS—In cold weather, the building should be glazed and heated before lathing.

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1.3 MATERIALS—All materials as herein specified shall be manufactured by the United States Gypsum Company.

1.4 GROUNDS—Grounds shall be set to provide the following minimum thickness, including 1/16″ finish:

- ½″ on gypsum lath and 1″ Long Length ROCKLATH* plaster base
- ⅝″ on masonry base
- ⅝″ on metal lath, measured from face of lath
- ¾″ on Long Length ROCKLATH used for 2″ Solid Partitions or Exterior Wall Furring

Note: Greater thicknesses are required for certain fire-rated constructions.

1.5 ATTACHMENT OF ROCKLATH* PLASTER BASE

a. ROCKLATH Plaster Base shall be applied face out with the long dimension at right angles to the framing members. All joints shall be butted together and the lath shall be cut accurately and fitted neatly around all electrical outlets, openings, etc.

The end joints shall be staggered in successive courses.

b. ⅜″ *ROCKLATH Plaster Base*

Framing	Maximum Spacing	Attachment	Spacing
Wood	16″ o.c.	**Nails**—13 ga., 1⅛″ long 19/64″ flat head, blued. **Staples**—16 ga. galv. flattened wire, flat crown 7/16″ wide, ⅞″ legs having divergent points.	4 per 16″ width of lath. 4 per 16″ width of lath.
L-P Stud	24″ o.c.	USG L-P Screws, Type S, ¾″	2 per 16″ width, 2″ from each edge.
TRUSSTEEL* Stud	16″ o.c.	TL-1 Clips TR-1 Resilient Clips	16″ o.c. along stud. 16″ o.c. along stud.
Metal Nailing Stud	16″ o.c.	Nail or staple as recommended by the manufacturer of the stud.	4 per 16″ width of lath.
¾″ Channels	16″ o.c.	BRACE-TITE* Clip	1 per 16″ width.

½″ *ROCKLATH Plaster Base*

Wood	24″ o.c.	**Nails**—13 ga., 1¼″ long, 19/64″ flat head, blued. **Staples**—16 ga. galv. flattened wire, flat crown 7/16″ wide, 1″ legs having divergent points.	5 per 16″ width of lath. 5 per 16″ width of lath.

c. Where the type framing or spacing of framing does not allow for secure attachment of butt ends to a framing member, apply ROCKLATH* Plaster Base with the long dimension across the framing members, with end joints staggered in successive courses. Ends of lath shall fall between framing members, and be aligned and engaged using the BRIDJOINT* Clip.

d. Apply Cornerite to all interior angles. Staple to the lath only.

1.6 ATTACHMENT OF METAL LATH

a. All metal lath shall be applied with the long dimension of the sheet across the supports. Riblath shall be applied with the rib projecting against the supports.

The ends of all lath shall be lapped not less than 1 inch. If end laps are made between supports they shall be adequately tied with 18 gauge tie wire. The sides of diamond mesh lath shall be lapped not less than ½ inch. Riblath shall be lapped by nesting the outside ribs.

Wherever possible, end of lath in adjacent courses shall be staggered.

Metal lath shall be secured to all supports at intervals not exceeding 6 inches.

b. *Metal Lath*

Framing	Maximum Spacing	Attachment	Spacing
Wood Studs	SEE TABLE PAGE #16	**Nails**—4d common, driven to ¾″ penetration and bent over to engage 3 strands on through the rib. **Nails**—1″ roofing nail 7/16″ head, engaging 2 strands on through the rib. **Staples**—1″, 14 ga. wire staples, engaging 2 strands on a rib.	6″ o.c. 6″ o.c. 6″ o.c.
Wood Joists		**Nails**—1½″, 11 ga. barbed roofing nail, 7/16″ head, engaging 2 strands or a rib.	6″ o.c.
Steel Studs, Channels or Rods		No. 18 ga. tie wire	6″ o.c.
Nailing Studs or Channels		Nail or staple as recommended by manufacturer of the member.	6″ o.c.

c. At all interior angles, metal lath shall be formed into the corners and carried out onto the abutting surface, and adequately secured.

1.7 LATHING ACCESSORIES

a. Metal base shall be 2½″ high, (18) (20) gauge, painted. Metal Base shall be notched to a neat miter in forming all angles. In continuous runs, ends shall be evenly butted and internally spliced with a splice plate. Base shall be securely held in place by clipping to base clips. Base clips shall be secured to concrete floor using concrete stub nails or power driven anchors.

b. Metal Corner Bead No. (000000). Corner Bead shall be provided on all external plaster corners, and shall be in single lengths where the length of the corner does not exceed standard stock lengths. Fasten securely with tie wire, galvanized staples, etc., spaced not over 8″ on center stagger in two wings.

c. Casing Bead No. (000000). Casing bead shall be installed where indicated. Ends shall be accurately cut and mitered and the casing bead shall provide full plaster grounds when securely installed.

d. Base Screed No. (000000). Base Screed shall be installed 6 inches above the finish floor, unless otherwise indicated. Set screeds level, true to line, in lengths as long as practical, with joints aligned with a suitable splice. Wire tie or staple in place.

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e. **Cornerite**—3″ x 3″ Cornerite shall be installed in all interior plaster angles, except where diamond mesh lath has been bent into the corners. Staple, wire tie, or nail at the edges.

f. **Reinforcing**—Install a strip of self-furring diamond mesh lath over joints between dissimilar plaster bases.
At all openings, reinforce the corners attaching a 12″ x 24″ piece of self-furring diamond mesh lath diagonally across the corners.
Note: Not applicable over metal lath.

g. **Control Joints**—Control joints shall be provided as indicated and shall consist of two pieces of #66 casing bead back to back. Lath, masonry, grillage and supporting members are to be broken behind the control joint.

1.8 PARTITION—Partitions shall be of the type and size shown on the plans or as herein specified.

Partitions shall be aligned accurately according to the partition layout.

Runner tracks where required shall be securely attached.

1. *To Concrete Slabs*—using concrete stub nail or power driven anchors, spaced not to exceed 24 inches on center.
2. *To Ceiling Grillage*—Wire tie, using a double strand of 18 gauge tie wire, spaced not to exceed 16 inches on center.
3. *To Plaster or Gypsum Lath*—Toggle bolt, spaced not to exceed 24 inches on center.

1.8a TRUSSTEEL* Stud Specifications—TRUSSTEEL Studs shall be of the size shown on the plans or as herein specified. All studs shall be of sufficient length to properly engage the floor and ceiling runner track.

Snap-in Ceiling Track—a minimum of ½ inch engagement.

Regular Runner Track and Shoes—not more than 3 inches short of the runner track.

Studs, track, clips and accessories shall be as manufactured by the United States Gypsum Company for installation as a partition system.

1.8a.1 Erection—Regular or Snap-in Runner Track shall be securely attached as herein specified.

Combination Stud-Base Clips may be used in lieu of floor track, spaced not more than 16 inches on center, secured with concrete stub nails or power driven anchors where a 2½″ metal base is being used.

Studs shall be placed vertically, engaging runner tracks or Stud-Base Clips. Studs shall be secured to Regular Runner Track at floor and ceiling with a pair of shoes, crimped or wire tied in place using a double strand of 18 gauge tie wire. Two wire ties of double strand 18 gauge wire shall be used at all studs immediately adjacent to door frames or borrowed light frames.

Studs shall be spaced not to exceed 16 inches on center, and a stud shall be placed 2 inches from abutting partitions, internal corners, partition terminals, with double studs at all door or borrowed light frames.

Studs shall be inserted into steel door frames, nested in notches of the jamb anchor clips (four per side) and each chord of the stud securely wire tied at each of the jamb anchors.

An aligning ¾″ channel shall be used over each door head, extending out on each side of the frame to the third stud. The channel shall be securely wire tied to the chord at each stud.

1.8a.2 ROCKLATH* Plaster Base (Direct Attachment)—ROCKLATH, (Plain) (Perforated), application shall start at the bottom with long dimension at right angle to the studs. The lath shall be clipped in place using TRUS-LOK* Starter Clips TL-2, or Drive-in Clips, TRUS-LOK Field Clips TL-1 and TRUS-LOK Finisher Clips TL-3, spaced not to exceed 16 inches on center. End joints of lath shall be staggered between studs and aligned using at all lath corners the BRIDJOINT B-1 Field Clips.

1.8a.3 Resilient ROCKLATH* Plaster Base—ROCKLATH, (Plain) (Perforated), application shall start at the bottom course with long dimension at right angle to the studs. The lath shall be resiliently clipped in place using the Resilient Starter and Finisher Clip R-SF and the Resilient Field Clip TR-1, spaced not to exceed 16 inches on center. End joints of the lath shall be staggered between studs and aligned using at all lath corners the BRIDJOINT B-1 Field Clip.

1.8a.4 Metal Lath—Metal Lath (3.4# Diamond Mesh) (Z-Riblath) (⅜″ Riblath) shall be applied with the long dimension of the sheet across the supports. Riblath shall be applied with the rib projections against the supports.

The ends of all lath shall be lapped not less than 1 inch. If end laps are made between supports, they shall be adequately laced or tied with 18-gauge tie wire. The sides of diamond mesh lath shall be lapped not less than ½ inch. The sides of riblath shall be lapped by nesting outside ribs, and shall be wire-tied to every support, and between supports not to exceed 9 inch intervals. All metal lath shall be placed so that the lower sheets overlap the upper sheets. Wherever possible, ends of lath in adjacent courses shall be staggered.

Metal lath shall be secured to all supports, except those covered in subsequent sections, with 18-gauge tie wire at intervals not exceeding 6 inches. Ends of all ties shall have three full twists, then shall be bent up in the plane of the lath.

4. Optional Inclusions

a. 16″ x 96″ ROCKLATH* plaster base is preferred on all TRUSSTEEL* Stud installations, and particularly over door frames.

b. Wood grounds for fixture attachment must always be wire-tied to the inside of the chord to prevent breaking up the stress skin of the lath and plaster.

c. *Door Frames*
   (1) Minimum of 16-gauge, shop primed.
   (2) Floor anchors securely attached using *two* power driven anchors or equivalent attachment to each clip. Clip shall prevent rotation at the base.
   (3) Four jamb anchors shall be provided on each side of the frame, welded to the trim returns. (See detail page 27)
   (4) Grouting of the door frame is recommended for all installations and is required where heavy or oversize doors are used. Grout shall be raked out to allow lath and plaster to be inserted into the frame. Under no conditions shall the lath or plaster die against the trim return of the door frame.

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d. In resilient partitions used for reasons of sound isolation it is necessary to take precautions to prevent leakage.
   1. (1) Specify a neoprene gasket under all floor and ceiling tracks.
   2. (2) Eliminate cutting holes back to back or adjacent to each other such as electrical outlets.
   3. (3) Use *sand aggregate* only.
   4. (4) Sound isolation can be improved by using USG Sound Attenuation Wool, 3″ blanket stapled or adhesively applied to the back side of one face of ROCKLATH, or standing a 1″ by 16″ by ceiling height 6 lb. density USG Sound Attenuation Wool Pad.

1.8a.5 Resilient Metal Lath—Resilient Clip No. 400 shall be snapped over the chord of the TRUSSTEEL* Stud, spaced not to exceed 16 inches on center with a clip located not more than 4 inches from the floor and ceiling. ¼ inch Pencil Rods of ceiling height length shall be snapped into the small loop of the 400 Clip.

Note: (*Use* paragraph 1.8*a*.4 for attachment of Metal Lath)

1.8b L-P STUD SPECIFICATION—L-P Studs shall be of the size shown on the plans or as herein specified. All studs shall be of sufficient length to properly engage the runner tracks floor to ceiling.

Studs, track, plaster base, clips, screws and accessories shall be as manufactured by the United States Gypsum Company for the installation as a partition system.

1.8b.1 Erection—The L-P Runner Tracks shall be aligned accurately according to the partition layout, and securely attached.

Studs shall be placed vertically, engaging both floor and ceiling runner tracks. When necessary, studs may be spliced by nesting two studs with a minimum lap of 8 inches and securely tied together with screws in each flange.

Studs shall be spaced not to exceed 24 inches on center and a stud shall be placed 2 inches from abutting partitions, internal corners, partition terminals, and other similar locations.

Studs shall be inserted into the steel door frame, accurately centered, and attached to the anchor clips securely, using a bolt or screw attachment.

a. Where lightweight doors are used a second stud shall be nested to form a box section and anchored together by a pair of screws at each anchor clip.

b. Where heavy doors or oversize doors are used the single stud shall be grouted in place.

Over the metal frames a cut-to-length section of track, with a web flange bend at each end shall be used as a header to receive studs above the frame.

Note: In no instance shall the lath and plaster or the plaster die against a trim return of the frame. Lath and plaster shall enter into the frame.

1.8b.2 Lathing ROCKLATH* Plaster Base—ROCKLATH shall be attached horizontally to L-P Studs with two ¾″ L-P Screws, Type S, at each stud. Screws shall be placed approximately 2 inches from the edges of the ROCKLATH. Screws shall be power driven with an electric Scrugun. End joints of ROCKLATH shall be staggered between studs and aligned using at all lath corners the B-1 BRIDJOINT* Clip.

1.8b.3 Metal Lath—Studs spaced not to exceed 16 inches on center for 3.4# Diamond Mesh or Z-Riblath, or 24 inches for ⅜″ Riblath.

Metal lath shall be applied with the long dimension of the sheet across the studs. Riblath shall be applied with rib projection against the stud.

The ends of all lath shall be lapped not less than 1 inch. If end laps are made between studs, they shall be adequately tied with No. 18 gauge tie wire.

The sides of diamond mesh lath shall be lapped not less than ½ inch. The sides of riblath shall be lapped by nesting outside ribs. All laps shall be wire tied not to exceed 9 inches on center between supports. Wherever possible, ends of lath in adjacent courses shall be staggered.

⅜″ Riblath shall be screw attached using a ¾″ L-P Screw, Type S, through each rib.

Diamond mesh shall be attached 6 inches on center using the ¾″ L-P Screw, Type S, so positioned as to engage two strands of the metal.

1.8c Solid Metal Lath & Plaster Partition—Studs shall be ¾″ C.R. Channel, and the partition thickness two inches unless otherwise noted. Studs shall be spaced not to exceed 16 inches on center and shall be of sufficient length to properly engage the USG Z-Type Ceiling Runner and the USG Floor Runner and Screed, or the USG Double Base Clips. A stud shall be wire tied at each jamb of steel or wood door frames and at openings cased with USG's 2″ Partition Terminal.

A horizontal reinforcement shall be used over all openings and shall consist of a ⅜″ round rod or a ⅛″ by 1¼″ flat bar. Saddle tied to each vertical stud, the bar or rod should extend out to the first stud beyond the frame.

(*Attachment of Metal Lath:* See paragraph 1.6)

1.8d Studless Solid Metal Lath & Plaster Partition—Floor tracks shall be (USG) 2½″ Metal Base and Double Base Clips) or (USG Floor Runner and Screed).

Ceiling runner shall be USG L-Type Ceiling Runner, located so that the USG ⅜″ Riblath, 3.4 lbs., will be located in the center of the partition.

The riblath shall be erected vertically, attached to the floor runner or set in a groove of the grouted metal base, and securely tied 8 inches on center to the ceiling runner.

Wire tie the nested edges of sheets 9 inches on center, and securely tie the metal lath to jamb inserts or door frames.

Partition terminals and cased openings shall be provided by USG's 2″ Partition Terminal wire-tied securely in place.

Temporary bracing shall not be less than ¾″ C.R. Channels placed horizontally near midheight of the partition and tied to the metal lath 24 inches on center and with 1½″ angle braces placed vertically not over 6′-0″ on center. Wedge the vertical braces at top and bottom and tie the horizontal ¾″ channel to hold lath in place.

1.8e Solid ½″ Long Length ROCKLATH* Plaster Base & Plaster Partition—Floor runner shall be (USG) 2½″ Metal Base attached to Double Base Clips 24 inches on center) or (USG Floor Runner and Screed).

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USG L-Type Ceiling Runner shall be used for ceiling attachment and as tie-in shoes where the partition abuts columns, exterior walls and partitions.

½″ Long Length ROCKLATH shall be cut in length to allow ¼″ minimum and 1¼″ maximum top clearance at the ceiling. The ROCKLATH Plaster Base shall be erected vertically. Vertical edges of ROCKLATH shall be kept as plumb as possible and the V-joint edges brought into close contact with adjacent edge. No vertical cut edges of lath shall be used in the central portion of partition. The use of lath having cut edges shall be confined to the ends of the partition or at door frames. ROCKLATH shall be neatly cut for electrical conduit, other piping or door struts, and one side of all openings thus formed shall be covered with 15# felt under metal lath fastened to the ROCKLATH. In cases where flexible electrical cable is fastened to the face of the lath or where other piping or door struts extend beyond the face of the lath, provision must be made for a full ⅜″ thickness of basecoat plaster over them. Where ROCKLATH Plaster Base intersects other partitions, exterior walls or columns, it shall be wire-tied or fastened to tie-in shoes at third points of height.

ROCKLATH shall be placed during construction as recommended by the United States Gypsum Company.

Related Inclusions:

Steel frames shall be furnished with clip inserts for centering ROCKLATH & plaster base in partition. If door frame struts are furnished, they shall not exceed ⅝″ in size in direction of partition thickness.

Fixture Attachment—Lightweight fixtures and trim shall be installed by drilling set dry plaster to a minimum depth of ¾″ and inserting a plastic plug or other expandable anchor for anchorage of attachment screws.

Cabinet and shelving grounds shall consist of ¾″ (actual dimension) by 1½″ wood strips, having 6d (minimum) coated nails driven ⅝″ into both edges at not over 12″ on center, attached to the ROCKLATH by nailing, wire tying or bolting. Lavatory and sink hangers on solid partitions shall be installed by wire tying an 18-gauge perforated plate of size equal to hanger (maximum 6″ x 24″) to opposite side of the lath and placing hanger bolts prior to plastering.

Ceramic Tile—(Where ceramic tile is required over ROCKLATH, self-furring diamond mesh metal lath shall be stapled over the ROCKLATH plaster base with staples spaced approximately 8″ on center, horizontally and vertically, and portland cement-lime plaster shall be applied in scratch and brown coats to ⅝″ grounds over lath as a base for the ceramic tile). (Ceramic tile shall be adhesively attached over the finished gypsum plaster in accordance with adhesive manufacturer's specifications.)

Electrical Work—Electrical conduit and outlet boxes shall be as specified elsewhere. Switch boxes and convenience outlet boxes shall not exceed 1½″ in depth and, if plaster ring is used on 4″ x 4″ convenience outlet boxes opening one side only, the box shall not exceed 1¼″ in depth, to provide ½″ of plaster on the back side. Electrical conduits or cables shall be placed so that a full ⅜″ thickness of basecoat plaster can be applied over them.

1.8f Solid 1″ Long Length ROCKLATH* Plaster Base & Plaster Partition—The floor runner shall consist of a USG 2½″ Metal Base attached to Double Base Clips 24 inches on center and grouted and V-cut to provide a centering track, or the USG Floor Runner and Screed.

The USG L-Type Ceiling Runner shall be used for the ceiling track and the tie-in shoes where the partition abuts exterior walls, columns, partitions, etc.

The long length laminated ROCKLATH Plaster Base shall be cut to allow a ¼″ minimum and a 1″ maximum top clearance in the ceiling runner. The ROCKLATH shall be installed vertically, engaging the bottom in the groove of the floor runner and securing top to the ceiling runner by either tying, stapling or clipping, or installing Cornerite tie-in shoes on side opposite the ceiling runner as lath is installed.

Vertical edges of the ROCKLATH shall be kept reasonably plumb and the shiplapped edges be brought into close contact one with the other and held by driving a 6d nail diagonally through the lapped edges at the third points of height minimum, and at additional points as required to maintain contact. No vertical cut edges of lath shall be used in the field portion of partition, but shall be confined to the ends of partition or at door frames. The lath shall be neatly cut to let-in electrical conduit, other piping, or door struts. Chased areas shall be covered on one side with metal lath backed with 15# asphalt felt and the other side with metal lath, all stapled to lath. The areas over door, borrowed light, or other openings, extending 6″ minimum each side and below the top corners of the opening, shall be covered both sides with a single piece of self-furring metal lath stapled to the ROCKLATH Plaster Base. All chased areas below lath shall be covered one side with asphalt felt.

For partitions over 8′-4″ in height a 1½″ steel channel temporary horizontal brace located just below mid-point of partition height and wire tied to each lath may be required.
(See 1.8e for *Related Inclusions*)

1.8g Channel Stud Core Wall—The core wall shall consist of two lath and plaster diaphragms supported by a channel iron grillage.

Runner tracks shall be provided at each face.

Floor runners shall consist of Single Base Clips at 16 inches on center with 2½″ USG Metal Base Face Plate or the USG Floor Runner and Screed.

The ceiling tracks shall be USG Z-Type Ceiling Runner.

The double row of ¾″ C.R. Channel Studs shall be spaced not to exceed 16 inches on center and shall be of sufficient length to properly engage the floor and ceiling runners.

Aligning ¾″ channels shall be saddle-tied to the inside face at each stud. A pair of aligning channels on partitions 9′-0″ or less at mid-point or at third points not to exceed 4′-0″.

The channel grids shall be tied together by forming brackets of ¾″ channels, spaced 30 inches on center along the horizontal aligning channels. Legs of the brackets and channels to be nested and securely wire-tied.

Note: (For *Metal Lath Plaster Base*—Use paragraph 1.6)
(For *ROCKLATH Plaster Base*—Use paragraph 1.5)

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1.9 WALL FURRING

1.9a Vertical Furring with TRUSSTEEL* Studs—Use the same basic specification covered in paragraphs, 1.8a, 1.8a.1, 1.8a.2, or 1.8a.3.

Supplementing this specification with the following:

The back chord of the TRUSSTEEL Stud must be bridged using continuous ¾″ channels at the third points or not to exceed 48 inches on center. The channels to be saddle-tied at each stud.

Maximum height of TRUSSTEEL Stud furring shall not exceed:

Stud Size	Free Standing	Braced
1⅝″ TRUSSTEEL Stud	6′-0″	9′-0″
2½″ TRUSSTEEL Stud	10′-0″	15′-0″
3¼″ TRUSSTEEL Stud	14′-0″	21′-0″
4″ TURSSTEEL Stud	15′-0″	22′-0″
6″ TRUSSTEEL Stud	17′-0″	26′-0″

Braced furring requires a rigid, secure attachment at 24 inches on center along the mid-point bridging channel to the masonry back-up.

1.9b Long Length ROCKLATH Plaster Base Wall Furring System—Floor runner track shall be USG Floor Runner and Screed, or USG Metal Base and Single Base Clip grouted and grooved.

USG L-Type Ceiling Runner shall be attached to the construction above as required, plumbed up from the floor runner, or a furring channel shall be installed 6″ from top as specified below.

USG Adjustable Wall Furring Brackets, with serrated edges up, shall be attached to the masonry walls not over 4″ from columns or other abutting construction and not over 36″ on center horizontally and vertically, and as required above and below windows, using (one 2″cut nail in mortar joints of brick clay tile, or cement block or in the field of lightweight aggregate blocks) (⅝″ concrete stub nails or power driven nails or other suitable fasteners in monolithic concrete). Fastenings shall be driven through top hole of bracket. Furring channels shall be laid horizontally on the furring brackets with the legs down, plumbed to a line with the ceiling runner and base, and wire tied to the bracket with a double strand of 18-gauge tie wire. Excess bracket length shall be bent down.

⅜″ Long Length Insulating ROCKLATH shall be applied with the long edges vertical and butted lightly, with the foil facing the furred space. The bottom of the lath shall be set in the groove provided in the base grout or wood runner. The top of the lath shall be fastened to the ceiling runner with USG ceiling runner clips, two per piece of lath, 4″ to 5″ from each edge. Each piece of lath shall be wire tied over a nail at the edges to each intermediate horizontal channel. ROCKLATH shall be cut and fit to allow slight clearance around window frames. 3″ Striplath shall be applied over the full length of all ROCKLATH joints above and below windows.

1.9c Channel Grid Furring System—¾″ channel studs shall be erected vertically 16 inches on center and aligned and secured by:

1. Engaging nubs in the USG Floor Runner and Screed or the Single Base Clip.
2. Engaging the Z-Type ceiling runner.
3. Saddle tying to horizontal ¾″ channel girts spaced not to exceed 4′-6″ on center.

The horizontal girts shall be secured to the masonry back-up at 36 inches on center by saddle tying the channel to serrated leg of USG Adjustable Wall Furring Brackets.

1.9c.1 (Use paragraph 1.5 for *Attachment-ROCKLATH Plaster Base*)

(Use paragraph 1.6 for *Attachment-Metal Lath*)

1.9d Resilient Metal Lath Furring & Sound Isolation—USG #500 Resilient Clips shall be installed 18 inches on center vertically and 16 inches on center horizontally. With 2″ staples or 10d cut nails driven through the clip into the solid section of PYROBAR* gypsum tile. With 10d cut nails driven through the clip into the mortar joint of concrete masonry or clay tile. ¾″ cold rolled channels are wired to the inside of the tongs of the clips with legs of channels away from lath.

(*Metal Lath Installed* as paragraph 1.6a)

1.9e Resilient ROCKLATH* Plaster Base Furring & Sound Isolation—USG Metal Base shall be installed to establish proper grounds at floor line (paragraph 1.7), fully grouted and the grout grooved to receive ROCKLATH Plaster Base. *Alternate:* A wood runner grooved to receive ROCKLATH shall be aligned to provide proper grounds and securely fastened in place.

L-Type ceiling runner shall be properly aligned and secured to the construction above. ROCKLATH is installed horizontally, fitted into the groove provided and secured at top of sheet by USG R-5 Resilient Clips spaced 16 inches on center along top edge. R-5 Clips shall be attached to masonry; with a 2″ cut nail through the clip into block or masonry joint for block walls; with a 1¾″ fence staple horizontally through a hole knocked in clay tile walls; with a 2″ fence staple driven across the leg of the clip into PYROBAR* Partition Tile. Continuous courses of ROCKLATH shall be similarly applied with end joints staggered and joined at top and bottom with R-5 Clips. The top course shall be fastened to the L-Type ceiling runner with USG Ceiling Runner Clips 16 inches on center.

2.0 RESILIENT ROCKLATH* PLASTER BASE ON WOOD FURRING—⅜″ ROCKLATH Plaster Base shall be applied with end joints staggered. R-SF Clips shall be nailed to the framing at 16 inches on center at the top and bottom to provide attachment for the first and last courses of ROCKLATH. ROCKLATH shall be attached to the framing members by means of USG R-1 Resilient Clips nailed to framing and placed at every intersection of ROCKLATH edges with framing members, and at corners with USG R-2 Resilient Clips so that the ROCKLATH is secured by the clips spaced 16 inches on center in both directions. USG Corner Beads, Cornerite and other specified lathing accessories shall be stapled only to ROCKLATH.

2.1 SUSPENDED CEILINGS

2.1a Erection of Grillages—Hangers shall be spaced not over 3′-0″ in the direction of the main runners and not over 4′-0″ in the direction at right angles to the main runners, and within 6 inches of the ends of main runner runs and of boundary walls, girders or similar interruptions of ceiling continuity.

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Main runners shall be placed not over 4′-0″ on center, properly positioned, leveled, and hangers shall be saddle tied along runner.

Main runners shall not be let into nor come in contact with abutting masonry walls. Runner channels shall be located within 6 inches of the walls to support the ends of the cross furring.

Cross furring channels shall be spaced as required for plaster base used and securely saddle tied with two strands of 16-gauge tie wire to main runners and shall not be let into or come in contact with abutting masonry walls.

2.1b Metal Lath Ceilings—(Metal lath is applied to suspended grillage as in paragraph 1.6a.)

2.1c Furred Ceiling on Steel Joists—(4′-0″ or less on center).

Furred members shall be ¾″ cold rolled channels and shall be erected at right angles to the steel joists. They shall be securely attached to the bottom flanges.

(Metal Lath Applied to Grillage as paragraph 1.6a, or BRACETITE* ROCKLATH* Plaster Base applied as paragraph 2.1d).

2.1d Suspended BRACE-TITE* Clip Ceilings—(Grillage is installed as paragraph 2.1a with 16 inch spacing of ¾″ furring channels.)

ROCKLATH* Plaster Base shall be applied with the long dimension at right angles to the ¾″ channels and secured to the channels with BRACE-TITE Field Clips. ROCKLATH end joints shall fall between channels and be secured with B-1 field clips on each side.

One-Hour Rating—Perforated ROCKLATH, ⅝″ perlite plaster.

Two-Hour Rating—Lengths of 14-gauge wires shall be run diagonally across ceiling through each BRACE-TITE clip loop—½″ perlite plaster.

Three-Hour Rating—Same as two-hour rating except change furring channel spacing from 16 inches on center to 12 inches on center.

Four-Hour Rating—Add to three-hour rating the following: "Staple 20-gauge hexagonal mesh to lath and wire tie mesh to furring channels at long edge of the lath."

2.2 STEEL COLUMN FIREPROOFING

2.2a ROCKLATH* Plaster Base

For 1, 1½, 2 or 3 hour fire-rated construction—⅜″ Perforated ROCKLATH shall be applied vertically to the column faces and bridging the web spaces being secured by double strands of 18-gauge tie wire 15 inches on center. USG 1-A Corner Beads shall be set at each corner to establish the grounds shown.

For 4 hour rating—A double thickness of ½″ Long Length ROCKLATH shall be applied vertically to column faces and bridging the web space being secured by a double strand of 18-gauge tie wire 24 inches on center. One-inch hexagonal 20-gauge galvanized wire fabric shall be wrapped around the column and fastened in place over the ROCKLATH. USG 1-A Corner Bead shall be tied to the corners to provide 1½″ grounds over plaster base.

2.2b Metal Lath Plaster Base—Self-furring Diamond Mesh Lath shall be formed to neatly fit the column and wire tied not over 6 inches on center at laps. *Alternate:* Install ¾″ channel brackets and studs as shown to provide required chase. Tie diamond mesh lath to channels with 18-gauge tie wire.

USG 1-A Corner Bead shall be wire tied to metal lath corners to provide plaster grounds shown.

2.2c Column Fireproofing with PYROBAR Gypsum Tile (See page no. 21).

2.2d Steel Beam Fireproofing—Framework shall be formed, as shown on drawings, of ¾″ channels or pencil rods. ¾″ channel longitudinal furring brackets shall not be spaced more than 3′-0″. Spacing for brackets formed of ¼″ pencil rod shall not exceed 19″.

Without longitudinal furring bracket, spacing is limited to 13½″ for 3.4# diamond mesh lath and a minimum of one longitudinal channel is required to hold bracket alignment. Grounds shall be installed to insure required plaster thickness shown.

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A.I.A. File 21-A
39-B

TECHNICAL INFORMATION

USG* GYPSUM PLASTERS —

FINISHING LIMES
ACOUSTICAL PLASTERS

UNITED STATES GYPSUM

UNITED
STATES
GYPSUM

A.I.A. File 21-A
39-B

1963

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BASECOAT PLASTERS

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NOTE TO THE ARCHITECT

In the preparation of plastering specification consideration should be given to the selection of materials for compatibility and the quality of the structure to be plastered. ASA Specifications and the specifications within the AIA File are based on Minimum Standards. Unfortunately, most plastering specifications are written on a minimum basis, despite the fact that all the elements are available to upgrade plastering for quality installations. It is not possible to be specific without knowing the project under design, the type base, etc., however, it is possible to generalize. The following recommendations are listed in the order of preference:

Basecoat Plaster (over metal lath)

Scratch Coat	Brown Coat
1. Wood Fiber neat	Red Top*Plaster sanded 1:3
2. Wood Fiber neat	Structo-Lite*
3. Red Top* Plaster sanded 1:2	Red Top Plaster sanded 1:3
4. Structo-Lite*	Structo-Lite
5. Red Top Plaster Perlited 1:2	Red Top Plaster Perlited 1:2

Aggregates

1. Sand
2. Mill Mixed Perlite
3. Job Mixed Perlite
4. Job Mixed Vermiculite

Note: Lightweight aggregates must *never* be used on a construction where sound isolation is a consideration.

Finish Coats

1. Oriental Interior (Float Finish only)
2. Ivory Lime (92% hydrate) Keenes Cement and White Silica Sand (Float Finish only)
3. Ivory Lime, and Structo-Gauge
4. Ivory Lime, and Keenes Cement
5. Ivory Lime, Red Top Gauging, with ½ cu. ft. of Perlite fines or fine silica sand.

Note: Finishes 1, 2 and 5 are the only finishes recommended for use over a perlited basecoat. Finishes 3 and 4 provide high abrasion resistance and because of their hardness must be used over a comparably hard basecoat.

Application

Three-coat work is mandatory on all metal lath and edge supported gypsum lath on ceiling construction.

Three-coat work is desirable on all gypsum lath.

Two-coat work is acceptable on unperforated gypsum lath and masonry plaster bases.

The UNITED STATES GYPSUM COMPANY maintains a qualified staff of Technical Consultants, Architect Service Representatives, conveniently located in most major markets to assist in resolving specific problems.

BASECOAT PLASTERS

DESCRIPTION

The base of all gypsum plasters is gypsum rock, hydrous calcium sulfate, which has a water content of about 20% in chemical combination. When water is added at the job, the material crystallizes (sets), reverting to its original chemical composition.

Red Top Gypsum Plasters are specifically formulated to control setting time and other important characteristics. This depends upon the intended method of application, the climatic conditions of the area in which they will be used, and their intended use.

USG Basecoat Plasters can be applied by using either hand or machine methods, on gypsum or metal lath; gypsum, clay, or concrete tile; concrete or cinder blocks; brick, or other approved plaster bases.

FUNCTION & UTILITY

Basecoat plasters provide a plastic working material which will conform to most designs and provide the ultimate in durable walls and ceilings.

Fire-Protection—Gypsum plaster, properly proportioned with approved aggregates, and used in conjunction with specific plaster bases, provides excellent fire-protection.
(See pages 12 & 13 of AIA File 20 for "Fire Test Data")

Strength—There are significant differences in the strengths of gypsum basecoat plasters. The strength of a gypsum basecoat plaster is dependent on three factors:

1. *Water-Cement Ratio*—The water required to produce a plastic mix depends on the amount and type of aggregate. (See technical data page 3)
2. *Control of Set*—Red Top Gypsum Plasters are formulated for use with market aggregates, climatic conditions, and job conditions. The quicker a gypsum plaster sets, the stronger the basecoat.
3. *Ventilation and Drying* are important adjuncts to producing a strong basecoat once the gypsum plaster has set. Not only must the plaster be dried, but the water must be removed from the building.

Sound Isolation—Gypsum plaster in combination with lathing or construction systems offers sound transmission loss characteristics suitable for most requirements. Sanded basecoat plasters provide the optimum results.

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LIMITATIONS OF USE

1. Red Top Cement Plaster must have aggregate added strictly according to specifications. Use of too much aggregate drastically decreases its strength.
2. Where sound transmission is the prime consideration in partition or ceiling assemblies, use sand aggregate only, since mass is a controlling factor.
3. Bondcrete should be used on interior concrete surfaces providing the surface is sufficiently rough to provide a proper bond. Maximum thickness of Bondcrete shall not exceed ⅜″ on ceilings or ⅝″ on walls. If additional thickness is required, self-furring metal lath should be secured to the concrete surfaces. Under no circumstances should Red Top Cement Plaster or Wood Fiber Plaster be applied directly to monolithic concrete.
4. Gypsum plasters should not be used where they will come in contact with water or excessive moisture. In such instances use Portland cement-lime plaster.

   Gypsum plasters may be applied to ceilings of open porches, car-ports, soffits of eaves, walkways, and canopies, but only when these surfaces are horizontal or inclined downward from the structure. All such plaster surfaces should be protected from direct exposure to rain and suitable drips and casings provided along edge exposure. Refer to Gypsum Association, AIA File 21-A-2, Gypsum Plaster in Exterior Locations.
5. Plaster application on masonry or concrete walls, or ceilings that have been coated with bituminous compounds or other waterproofing agents is not recommended.

   Because of the possibility of condensation or water seepage, plastering to interior side of exterior masonry walls above grade or exterior foundation walls below grade is not recommended. In each instance they shall be furred and lathed before plastering. Sub-grade construction should also be water-proofed on the exterior side.
6. Radiant heat plaster slabs shall not have surface temperatures exceeding 115° Fahrenheit. Check conductivity of the plaster and aggregate. The thermal conductivity of gypsum-sand plaster is approximately three times that of Structo-Lite. Refer to Gypsum Association, AIA File 21-A-2, Gypsum Plaster with Radiant Heating.
7. Basecoat plasters must not abut or stop against a hollow metal door frame return unless provision is made to dampen the trim return vibration by grouting, and the use of special anchors. Lath and plaster should recess into or behind metal frames or base.
8. Gypsum plasters designed for machine application should be used in plastering machines only. They are not intended for application by hand.
9. On remodeling work where a new plaster surface is to be applied over an existing wall or ceiling, the use of self-furring metal lath, with scratch and brown coats of neat wood fiber plaster, will give superior results. The use of gypsum plasters containing light weight aggregates is not recommended for this purpose.

USE OF AGGREGATES With Gypsum Basecoat Plasters—maximum recommended proportions

Plastering Base	Number of Coats	Type of Coats	Maximum quantity of aggregate, in cu. ft. to be used with 100 lbs. of neat gypsum plaster			
			UNDER SMOOTH TROWEL FINISHES		UNDER OTHER FINISHES	
			Sand (1)	Perlite or Vermiculite	Sand (1)	Perlite or Vermiculite
GYPSUM LATH	3	Scratch	2	2	2	2
		Brown	3	2	3	3
	2	Basecoat	2½	2	2½	2½
METAL LATH	3	Scratch	2	2 (See	2	2
		Brown	3	2 Note)	3	3
UNIT MASONRY	3	Scratch	3	3	3	3
		Brown	3	3	3	3
	2	Basecoat	3	3	3	3

NOTE: Under a smooth trowel finish, in a construction system which has metal lath as the plaster base, vermiculite aggregate is not recommended for use in the basecoat plaster.

(1) Approximately six No. 2 shovels of sand equal 1 cu. ft.

TECHNICAL DATA—Basecoat Plasters

PLASTER		MIX	COMPRESSIVE STRENGTH	WEIGHT	CONDUCTIVITY
			psi—dry (1)	lb./cu. ft.—dry	(K)
STRUCTO-LITE	(Regular)		900	50	1.74
WOOD FIBER		Neat	2000	77	3.15
CEMENT PLASTER MIXED WITH—	Sand	1:1	1800	90	
		1:2	1065	103	5.51
		1:3	650	102	5.60
	Perlite	100:2	900	48	1.64
		100:3	550	41	1.31
	Vermiculite	100.2	485	48	1.74
		100.3	290	41	1.42

(1) Average Laboratory Test Results. Figures may vary slightly for products from individual mills. Tested in accordance with ASTM C26.

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BASECOAT PLASTERS

RED TOP Wood Fiber Plaster

Complies with ASTM Spec. C28-60 and Federal Specification No. SS-P-402W.

Red Top Wood Fiber Plaster is a gypsum plaster containing fine particles of selected wood fiber. It normally requires the addition of water only; however, when used over masonry plaster bases it can be mixed with sand in a proportion not to exceed 1:1 by weight. Wood fiber plaster can be applied to all standard lath and masonry plaster bases.

Wood fiber plaster is strongly recommended as a scratch coat for metal lath.

Weight—Wood fiber weighs approximately one-third less than a sanded gypsum basecoat.

Strength—Wood fiber has twice the compressive and tensile strength of sanded plaster.

Fire-Resistance—Wood fiber is an excellent fireproofing material, generally provides 50% higher ratings than sanded gypsum plaster.

Cost—Wood fiber plaster costs slightly more than sanded gypsum plaster. Cost Index—122

RED TOP Cement Plaster

Complies with ASTM C28-60 and Federal Specification No. SS-P-402 Type M.

Red Top Cement Plaster is a gypsum basecoat requiring the addition of aggregate. It is supplied as either Fibered or Unfibered and is formulated for use over all accepted plaster bases. Formulation includes:

Regular—for use with sand aggregate, hand application.

LW—for use with lightweight aggregate, hand application.

Machine Application—for use with sand or lightweight aggregate.

Quality—Gypsum cement plaster is set stabilized and formulated for market conditions and seasonal changes.

Strength—Red Top Cement Plaster properly proportioned with aggregate forms a hard durable base for application of finish coats. Compressive strengths based on the type aggregate and proportioning are shown in the Technical Data Table, page 3.

Fire-Resistance—The fire-rating of specific assemblies, based on the type aggregate and proportioning, is shown in the Fire Ratings, AIA File 20, pages 12 & 13.

Cost—The Gypsum cement plaster mixed with a low cost aggregate increases its bulk and coverage. Highly plastic, it is easily and quickly applied. Cost Index—100

RED TOP STRUCTO-LITE Plaster

Complies with ASTM C28-60 for gypsum ready mixed plaster. Red Top Structo-Lite is a mill mixed gypsum cement plaster and perlite aggregate which requires the addition of water only at the job site. It is formulated in four types:

Regular—for use over gypsum lath, hand application.

Masonry—for use on high suction unit masonry base only, hand application.

Regular—for machine application on gypsum lath.

Masonry for Machine Application on high suction masonry unit.

Quality—Red Top Structo-Lite is formulated to assure the architect of a unit responsibility. Mill mixed lightweight aggregated plaster provides:

1. Control of set (see Red Top Cement Plaster, LW formulation).
2. Proper proportioning of aggregate (see page 3, two cubic feet of lightweight aggregate is recommended for both scratch and brown).
3. A quality of perlite with proper gradation and hardness necessary for a basecoat plaster.

Weight—Structo-Lite weighs less than half as much as sanded basecoat plaster.

Insulation—Structo-Lite has a "k" factor of 1.55, providing 3½ times the insulation of sanded plaster. For this reason Structo-Lite is not recommended for use with radiant heated panels.

Fire-Resistance—The added fire-protection afforded by Structo-Lite is the outstanding contribution of the product.

Cost—Over-all cost is comparable to job-mixed lightweight aggregate plaster. Cost Index—106

RED TOP BONDCRETE Plaster

Complies with ASTM C-28 for gypsum bond plaster.

Red Top Bondcrete is a specially formulated bonding basecoat plaster for use over properly roughened interior concrete surfaces. Water only is added.

Bond—Bondcrete adheres to properly prepared concrete surfaces (see Specifications, Section V, paragraph "a").

Bondcrete has approximately the same coefficient of expansion as concrete.

Cost—Since both labor and material costs are virtually the same as wood fiber plaster, it is an economical and practical basecoat for concrete surfaces.

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PORTLAND CEMENT PLASTER

Portland Cement Basecoat Plasters are required for interior use where high moisture conditions exist or as an exterior basecoat for stucco. A Portland Cement Lime Plaster is prepared on the job in the following proportions:

Scratch Coat—1 sack of Portland Cement
2 sacks of Mortaseal* Lime
7½ cu. ft. of sand
2 lbs. of fiber (over metal lath or stucco mesh)
Brown Coat—1 sack of Portland Cement
2 sacks of Mortaseal* Lime
9 cu. ft. of sand

Finish Coat—USG's Oriental Exterior Stucco (Mill mixed)

LIMITATIONS OF USE

1. Scratch and brown coat requires curing with water after set.
2. Must not be applied directly to smooth, dense surfaces, gypsum lath or gypsum block. Self-furring metal lath must be secured to such surfaces before plaster is applied.
3. Control joints should be provided to compensate for the shrinkage of the Portland cement mortar during drying.
4. A Keenes cement-lime putty finish must never be used over a Portland cement basecoat.

FINISH COAT PLASTERS

DESCRIPTION

There are several types of gypsum finish plasters, some are used with the addition of water only, while others are a blend of gypsum, lime and water, or gypsum, lime, sand and water.

Since the finish coat must be compatible with the basecoat care must be taken in the selection of the finish coat materials in relationship with the characteristics of the basecoat.

There are three general classifications of finishing materials:

1. Prepared finishes
2. Smooth trowel finishes
3. Sand float finishes

FUNCTION & UTILITY

The finish coat serves as a leveling coat, as a base for decoration and provides the required resistance to abrasion.

Gauging plasters impart an early hardness and strength, minimizing the shrinkage characteristic of lime.

LIMITATIONS OF USE

1. Where *vermiculite* is used as the aggregate in a gypsum basecoat, or the proportion of perlite exceeds 1:2, a Sand Float Finish or an Acoustical Plaster must be used.
2. Where perlite is used as the aggregate in a gypsum basecoat (recommended proportioning 1:2), or when the basecoat is Structo-Lite, the finish coat must be an Acoustical Plaster, a sand float finish, or a trowel finish of Red Top Gauging Plaster and lime, with addition of ½ cu. ft. of perlite fines or 50 lbs. of No. 1 white silica sand per 100 lbs. gauging plaster.
3. No gypsum base finish including Keenes cement may be used over a Portland Cement Basecoat.
4. Gauging plasters providing extremely hard surface abrasion, Structo-Gauge and Keenes cement, must not be used over Structo-Lite, or a basecoat with a lightweight aggregate.

FINISH COAT MATERIALS

A chart for the selection of finish coat materials is provided on page 6. The following materials are included:

ORIENTAL* Interior Stucco—A colored finish plaster for a sand float or textured finish. May also be ordered formulated for machine application. Provides excellent hardness and a very durable finish.

Gauging Plasters—For blending with lime putty.

STRUCTO-GAUGE—A high strength gypsum gauging plaster, which provides the greatest hardness and resistance to surface abrasion. Complies with ASTM C28-60 and Federal Specification SS-P-402, with the added requirement of 5000 psi.

RED TOP Keenes Cement—A dead burned gypsum gauging, which requires extensive troweling. This troweling densifies the surface for hardness and resistance to surface abrasion. Complies with ASTM C61-50 and Federal Specification SS-C-161 Type I (Regular) II (Quick Troweling).

CHAMPION* and STAR* WHITE Gauging Plaster—These conventional quick and slow set gauging plasters, comply with ASTM C28-60 and Federal Specification SS-P-402, Type G.

RED TOP Gauging—Similar to Champion and Star Gauging except it comes in a slightly darker color. Complies with ASTM C28-60 and Federal Specification SS-P-402, Type G.

FINISHING LIMES

IVORY* Double Hydrated Finishing Lime—A 92% hydrated finishing lime. Does not require soaking, and eliminates the possibility of future expansion within the finish coat because of unhydrated magnesium oxides. Complies with ASTM C-206, Type S, and Federal Specification SS-L-351, Type F. (Not more than 8% unhydrated oxides).

RED TOP* and GRAND PRIZE* Normal Hydrate Finishing Lime—Hydrate lime which requires soaking at least sixteen hours to develop proper plasticity and the degree of hydration necessary prior to use. Complies with ASTM C6, Type N, and Federal Specification SS-L-351, Type F.

RED TOP and CHESHIRE* Finish Quicklime—High calcium finishing limes which require 16 hours of soaking to develop a proper plasticity and the required degree of hydration prior to use. Complies with ASTM C5 and Federal Specification SS-Q-351.

Thin Coat Plaster—Tufcon(1) is an especially prepared spray finish of high strength gypsum for a 1/16 inch finish coat to be applied over a Tufcon(1) Base. No basecoat is required. The Tufcon Plaster finish provides an extremely hard surface with outstanding abrasion resistance.

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(1) T. M. of Plastering Development Center, Inc

FINISH COAT PLASTERS

APPLICATION DATA

DESCRIPTION	FINISH TEXTURE	PHYSICAL PROPERTIES	PROPORTION BY DRY WEIGHT— GAUGING TO LIME	WORKABILITY FACTOR	COMMENTS	COST INDEX
ORIENTAL* Interior Stucco	Colored Float or Texture Finish	Hard and Resistant to Abrasion	Neat	1	Available in white and 6 colors. Mill control of aggregate, size and proportioning.	160
STRUCTO-GAUGE* and Lime Putty	White Trowel Smooth	Extremely Hard and Resistant to Abrasion	1:1	2	Use for handball courts and psychopathic wards over a wood fiber or STRUCTO-BASE basecoat.	150
STRUCTO-GAUGE and Lime Putty	White Trowel Smooth	Hard and Resistant to Abrasion	1:2	1	Use for hospitals and schools over a wood fiber or sanded gypsum basecoat.	125
Keenes Cement and Lime Putty	White Trowel Smooth	Hard and Resistant to Abrasion	4:1	7	Use for handball courts and psychopathic wards over a wood fiber basecoat.	180
Keenes Cement and Lime Putty	White Trowel Smooth	Medium Hard & Resistant to Abrasion	2:1	4	Use for hospitals and schools over a wood fiber or sanded gypsum basecoat.	170
Gypsum Gauged Lime Putty	White Trowel Smooth	Standard	1:2	1	For normal use, over a perlite basecoat add ½ cu. ft. of perlite fines or 50 lbs. of #1 silica sand per 100# gauging.	100
Keenes Cement Lime Putty and Sand	White Float Finish	Hard	50 lbs. Keenes 100 lbs. Lime 400 lbs. Sand	1	Commonly used float finish, may be satisfactorily colored.	125
Gypsum Gauging Lime Putty and Sand		Standard	50 lbs. Gauging 100 lbs. Lime 400 lbs. Sand	1	For normal use over any basecoat.	100
ORIENTAL* Exterior Stucco	Colored Float or Texture Finish	Extremely Hard and Resistant to Abrasion	Neat	3	For use over a Portland cement lime basecoat. Available in white and 6 colors.	150
TUFCON(1) Finish	Spray Texture or Trowel Smooth	Extremely Hard and Resistant to Abrasion	Neat	1	For use over an especially prepared TUFCON Base. No basecoat required.	

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USG ACOUSTICAL PLASTERS

The UNITED STATES GYPSUM COMPANY manufactures two types of sound absorbing, decorative finish acoustical plasters. They are architecturally adaptable to intricate ceiling designs, and can be used equally effective on curved or flat surfaces.

While these plasters perform the common function of absorbing sound and providing a decorative finish, each has certain characteristics which influence their individual selection.

HI-LITE* Acoustical Plaster

HI-LITE Stipple-Perforated

DESCRIPTION

Hi-Lite Acoustical Plaster is a pure white acoustical material, with excellent light reflective characteristics, making it particularly adaptable for use in schools and office buildings where light reflectance and efficiency of illumination are important considerations. Its relatively high moisture resistance makes it an excellent choice for acoustical treatment in natatoriums and other areas in which high humidities are anticipated. Hi-Lite Acoustical Plaster is not subject to the migration of rust stains from the construction over which it is applied.

It develops a harder finished surface than many acoustical materials, and can be cleaned or painted without reducing the absorption characteristics.

It may be applied over properly prepared gypsum plaster or Portland cement-lime plaster basecoats. It may be machine applied; however, the published sound absorption data does not apply in this case.

FUNCTION AND UTILITY

Sound Absorption—Noise Reduction Coefficient of .60 when stippled or stipple-perforated. When stippled, Hi-Lite exhibits outstanding sound absorption characteristics at the lower frequencies.

High Light Reflectance—Light reflectance of 80% for the normal stippled finish.

Maintenance—Hi-Lite Acoustical Plaster may be cleaned with vacuum cleaner using a soft brush attachment.

Paintable—May be redecorated with up to four coats of spray applied Texolite Standard Paint without reducing sound absorption characteristics.

LIMITATIONS OF USE

1. Hi-Lite must be machine mixed in strict accordance with directions to develop proper density and working qualities.
2. Hi-Lite may be machine applied, but published sound absorption coefficients do not apply unless hand applied and finished in accordance with specifications.
3. More durable than most acoustical materials, but is designed for use on ceilings or wall areas not subject to contact.
4. When perforated, a special perforator with rust resistant prongs should be used.
5. Hi-Lite is not recommended for use over radiant heating installations.
6. Hi-Lite is not recommended for direct application to monolithic concrete surfaces.

AUDICOTE* Acoustical Plaster

AUDICOTE Machine-Textured Finish

DESCRIPTION

Audicote Acoustical Plaster is a low cost acoustical material designed for either modern efficient machine application or conventional hand application methods over a wide range of surfaces. It can be applied over properly prepared gypsum or Portland cement basecoats, monolithic concrete, prefabricated concrete units.

The uniform texture resulting from spray application makes Audicote particularly suitable for use on large continuous ceiling areas. Through modifications of machine procedures and spray techniques, many pleasing textures are possible. Audicote is readily adaptable to tinting, and incorporation of special aggregates to further increase the design and decorative possibilities. Few other acoustical products present the designer with the flexibility and adaptability of Audicote Acoustical Plaster.

FUNCTION AND UTILITY

Sound Absorption—Noise Reduction Coefficient of .55.

Light Reflectance—When machine textured, has light reflectance of 65% for Satin White, and 70% for Special White.

Maintenance—May be economically refinished with a spray coat of Audicote.

Paintable—May be redecorated with up to two coats of spray applied Texolite* Standard Paint with no loss in Noise Reduction Coefficient. Up to four coats result in only a minor reduction in sound absorption characteristics.

Colors—Available in Satin White and Special White.

Audicote may also be tinted on the job.

LIMITATIONS OF USE

1. Audicote is designed for use on ceiling and wall areas not subject to contact, excessive vibration or high moisture.
2. Specified precautions must be taken under certain circumstances to prevent the migration of water-borne stains to the surface of Audicote. (See Specifications on Page 4.)
3. Audicote is not recommended for use over radiant heating installations.

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ACOUSTICAL PLASTERS

TECHNICAL DATA

ACOUSTICAL PLASTER	FINISH	LIGHT REFLECTANCE PER CENT (1)	HEAT INSULATION "K" FACTOR (2)
HI-LITE	Stippled	.80	.50
	Stipple-Perforated	.77	
AUDICOTE	Machine Textured	Satin White .65	.50
		Special White .70	

LABORATORY TEST DATA

The absorptions reported below are the test results of representative panels. It is not always possible to achieve these results in the field. Care must be taken to mix the material to specified consistencies and applied to uniformly full grounds.

1. Light reflectance from tests at an independent recognized laboratory.
2. Heat insulation data from tests at USG Research Laboratory.
3. Sound absorption from standard tests at a recognized laboratory.

SOUND ABSORPTION (3)

ACOUSTICAL PLASTER	FINISH	FREQUENCY						NRC
		125	250	500	1000	2000	4000	
HI-LITE	Stippled	.41	.26	.59	.78	.84	.65	.60
	Stipple-Perforated	.20	.24	.50	.76	.83	.76	.60
AUDICOTE	Machine Texture	.26	.28	.53	.67	.73	.66	.55

RED TOP* FIRECODE Plaster

DESCRIPTION

Red Top Firecode Plaster is a ready-to-use gypsum plaster for spraying directly to steel floor units, beams and columns, to provide fire protection. It is lightweight, requires no lathing, bonding, agents, or hand tool operations, and does not shrink on drying. It can also be applied over metal lath to provide a fire resistive enclosure around structural members in which piping, ductwork or electrical conduits may be enclosed.

FUNCTION AND UTILITY

Use of this lightweight fireproofing plaster in multi-story buildings to replace the heavy masonry or concrete formerly used to protect the steel structure greatly reduces the dead load and enables the designing engineer to use substantially lighter, less costly steel members. This new concept in building design is not only lower in cost, but provides increased flexibility in design, beauty, utility and safety.

Fire Ratings: Red Top Firecode Plaster provides fire-resistive ratings on all major types of steel floor units, and on steel beams and columns. (See FIRE TEST DATA for details.) Underwriters' Laboratories, Inc. have assigned a favorable Fire Hazard Classification, Guide No. 40 U 7.4½, which meets the requirements of NFPA pamphlet No. 220. UL labels on each bag verify that Red Top Firecode Plaster, "Type D, Cementitious (cement and plaster) Mixtures," may be used in accordance with construction details shown in Guide No. 40, U18.3, to meet the published fire rating.

Red Top Firecode Plaster provides shop primed steel with adequate protection from corrosion and eliminates the need for a job primer coat. (Test data available on request.)

One-coat application without hand tooling on steel floor units, and only two-coat application on beams and columns, as well as higher fire-retardant efficiency resulting in lower material usage, contribute to lower applied fireproofing costs than with other available materials.

Texture: Although not generally considered a finished surface, a pleasing spray texture can be accomplished. Acoustical Plaster may also be applied as a finish coat. Surface may also be spray painted with TEXOLITE Standard.

Red Top Firecode Plaster is available in two types—

Firecode Plaster, in which Perlite is the aggregate.

Firecode "V" Plaster in which Vermiculite is the aggregate.

Fire Ratings are interchangeable on the two types.

LIMITATIONS OF USE

Red Top Firecode Plaster must be applied under conditions acceptable to plastering—protected from freezing.

TECHNICAL DATA—

RED TOP FIRECODE PLASTER

Density Average applied dry density	27#/cu. ft.
Insulation Value "k" factor	.80

SOUND ABSORPTION

Frequency	125	250	500	1000	2000	4000	NRC
Sound Absorption	.42	.34	.37	.46	.61	.62	.45

Sound absorption; from tests at a nationally recognized independent laboratory.

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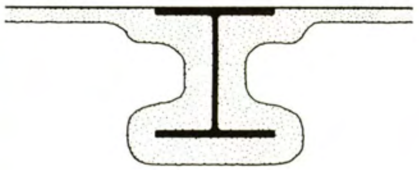
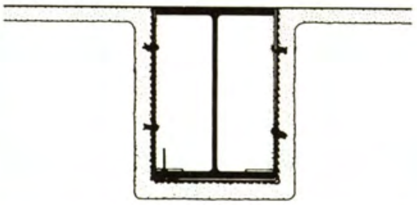
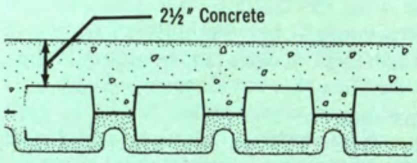
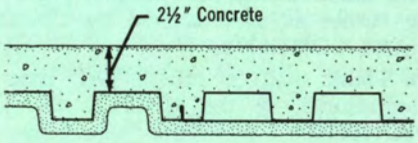
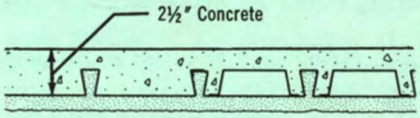
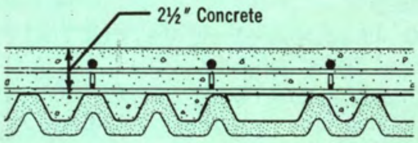
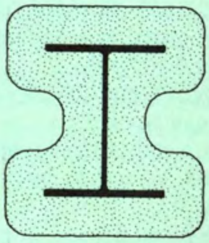
RED TOP FIRECODE PLASTER

CONSTRUCTION	DESCRIPTION	RATING	THICKNESS	AUTHORITY
	UL Design 32-3 Contour UL Design C-112 Contour UL Design 23-3 Contour	3 hrs. 4 hrs. 4 hrs.	1¼″ 1¼″ 1½″	UL 4142-7 ULC CR-252 UL 4142-4
	UL Design 23-3 Boxed	4 hrs.	1″	UL 4142-4
	UL Design 10-2 Contour UL Design 22-3 Contour	2 hrs. 3 hrs.	½″ ⅝″–¾″	UL 4142-1 UL 4142-3
	UL Design 14-2 Contour ULC Design C-112 Contour	2 hrs. 3 hrs.	¾″ ¾″–1″	UL 4142-2 ULC CR-252
	UL Design 32-3 Level	3 hrs.	¾″	UL 4142-7
	UL Design 23-3 Contour	3 hrs.	¾″	UL 4142-4
	UL Design 13-3 Contour UL Design 15-4 Contour	3 hrs. 4 hrs.	2⅛″ 2½″	UL 4142-5 UL 4142-6

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SPECIFICATIONS

I. SCOPE—Unless otherwise shown on the drawings, all walls and ceilings shall be plastered as herein described.

II. GENERAL PROVISIONS—In cold weather, the temperature of the building shall be maintained in the uniform range above 55° for an adequate period prior to the application of plaster, while the plastering is being done, and after the plaster is dry. The heat shall be well distributed in all areas, with deflection or protective screens used to prevent concentrated or irregular heat on plaster areas near source. When required, heat shall be furnished by . . .

Proper protection should be provided during plastering for finished door and window frames and other designated areas which do not receive a plaster finish.

Ventilation shall be provided to properly dry the plaster during and subsequent to its application. In glazed buildings, this shall be accomplished by keeping windows open sufficiently to provide air circulation; in enclosed areas lacking normal ventilation, provisions must be made to mechanically remove moisture laden air.

If glazed sash are not in place and the building is subjected to hot, dry winds or temperature differentials from day to night of 20° F or more, openings shall be screened with cheesecloth or similar material.

III. SURFACE PREPARATION

a. Monolithic concrete to which BONDCRETE is to be applied shall be cleaned of all dust, loose particles and other foreign matter. Laitance and efflorescence shall be removed by washing with a 10% solution of commercial muriatic acid and water, and then cleaning with water to remove all traces of acid. Grease and oil shall be completely removed. Concrete surfaces shall have sufficient roughness to provide proper bond. If surfaces are not rough, they shall be hacked or bush-hammered, or dash coated with Portland cement grout composed of one part of cement and one and one-half parts of fine sand mixed to a mushy consistency. This coat shall be kept damp for at least two days immediately following its application and then allowed to dry. Before application of the plaster, the surface shall be evenly dampened if necessary to reduce suction.

b. Unit masonry surfaces that exhibit high suction may be moderately wetted immediately before plastering.

c. Where RED TOP AUDICOTE Acoustical Plaster is indicated for application direct to smooth monolithic concrete, reinforcing bar chair legs shall be either galvanized or coated with rust inhibitive paint and use of nails or other raw steel against forms or surface of concrete held to a minimum. Where metal is exposed in spite of these precautions, and where AUDICOTE is to be applied directly against corner beads or other metal accessories, the metal should be treated with one coat of aluminum paint.

IV. GROUNDS—Plaster thicknesses shall be as shown on plans; however, in no case shall the grounds be less than:

Metal Lath and Wire Fabric	—⅝″ (from face of lath).
Gypsum Lath	—½″
Long Length Gypsum Lath	—¾″
Masonry Units	—⅝″
Monolithic Concrete Ceilings	—⅛″ (⅜″ maximum)
Monolithic Concrete Walls	—⅛″ (⅝″ maximum)
TUFCON Base	—1/16″
Acoustical Plaster	—½″

V. MATERIALS—Plaster and all cementitious material shall be stored under cover, up off the ground or floor, and kept dry until ready for use.

a. **Basecoat Plaster** shall be:
(RED TOP Wood Fiber), (RED TOP Cement Plaster), (STRUCTO-LITE), (BONDCRETE) as manufactured by the UNITED STATES GYPSUM COMPANY.

b. **Aggregate** shall be:
(Sand), (Perlite), (Vermiculite) meeting ASTM C-35 requirements. Sand for float finishes shall be a graded silica sand passing a (30 mesh) (20 mesh) screen.

c. **Water** shall be clean and fit to drink, free from oil, acid, alkali or vegetable materials.

d. **Finish Lime** shall be:
(IVORY), (GRAND PRIZE), (RED TOP) as manufactured by the UNITED STATES GYPSUM COMPANY.

e. **Gauging Plaster** shall be:
(STRUCTO-GAUGE), (Keenes Cement), (STAR), (CHAMPION), (RED TOP) as manufactured by the UNITED STATES GYPSUM COMPANY.

f. **Prepared Finish** shall be ORIENTAL Interior Colored Finish as manufactured by the UNITED STATES GYPSUM COMPANY. Colors to be selected by the architect.

g. **Acoustical Plaster** shall be:
(HI-LITE), (AUDICOTE) as manufactured by the UNITED STATES GYPSUM COMPANY.

i. **Plaster Ornaments and Mouldings** shall be made with RED TOP Moulding Plaster as manufactured by UNITED STATES GYPSUM COMPANY.

j. **Exterior Stucco Finish** shall be ORIENTAL Exterior Stucco as manufactured by the UNITED STATES GYPSUM COMPANY.

VI. BASECOAT PROPORTIONS

a. RED TOP Wood Fiber shall be mixed with water only, except over masonry plaster up to one part of sand may be added.

b. RED TOP Cement Plaster shall be mixed in the proportions shown in the chart on page 3.

c. STRUCTO-LITE shall be mixed with water only.

d. BONDCRETE shall be mixed with water only.

e. Portland Cement Mortar shall be mixed in the proportions as outlined on page 4.

VII. GROUTING—Grout shall consist of STRUCTO-LITE, or RED TOP Cement Plaster sanded 2:1.

a. All steel door frames in solid plaster and steel stud partitions prior to lathing, and in masonry partitions as the masonry units are laid up.

b. All 2½ inch metal base shall be grouted.

VIII. MIXING OF BASECOAT—Basecoat plasters may be hand mixed or mechanically mixed to a uniform consistency following the manufacturer's directions.

IX. BASECOAT APPLICATION—Either hand or machine application methods may be used.

Three coats are required on metal lath, edge supported gypsum lath on ceilings, and on ⅜ and ½ inch Long Length gypsum lath.

Three-coat work is desirable on all gypsum lath.

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Two-coat work is acceptable on masonry plaster bases and all gypsum lath except as previously indicated.

a. **Two-coat work:** over gypsum lath and masonry, the base (first) coat shall be applied with sufficient material and pressure to form a good bond to the base and to cover well, and then be doubled back to bring the plaster out of grounds, straightened to a true surface with rod and darby without the use of additional water, and cross-raked to receive the finish (second) coat.

Three-coat work: the scratch (first) coat shall be applied with sufficient material and pressure to form good full keys on metal lath, and a good bond on other bases, and then be cross-raked. The brown (second) coat shall be applied after the scratch (first) coat has set firm and hard, brought out to grounds and straightened to a true surface with rod and darby without the use of additional water, and cross-raked to receive the finish (third) coat.

b. **Optional Inclusions:**

1. *Solid Long Length ROCKLATH Partition:* The scratch coat shall be applied ⅜-inch thick, with a maximum set of 3 hours, to each side of the lath, simultaneous, if possible, or within a 3 hour interval. Cross-rake lightly horizontally only. The brown coat shall be applied to the unbraced side after the scratch coats have set and partially dried, (not less than 16 hours). After brown coat has set firmly (not less than 3 hours) carefully remove the braces and brown coat the second side. Brown coat shall be brought out to a true plane and cross-raked.

Note: *When 1″ core is used, no bracing is required up to 8′ 3″ in height. The basecoat shall be applied 7⁄16-inch thick, simultaneous, if possible, but in any event before the first side has set. No lightweight aggregate.*

2. *Solid Studless Metal Lath Partition:* The scratch coat shall be applied to the lath side and partially dry. The brown coat shall then be applied to the side opposite the braces, allowing it to set thoroughly before removing temporary braces. Next the brown coat shall be applied to braced side to bring the plaster out to grounds, straightened to a true surface with rod and darby without the use of additional water, and cross-raked to receive the finish coat.

3. *Solid Channel Stud Metal Lath Partition:* The scratch coat shall be applied to lath side and allowed to set and partially dry. The back-up coat shall then be applied to the channel side to full grounds, ½″ over channels, in not less than two operations and allowed to set. The brown coat on lath side shall then be applied to bring the plaster out to grounds, straightened to a true surface with rod and darby without the use of additional water, and cross-raked to receive the finish coat.

4. *Resilient ROCKLATH Plaster Base Ceiling:* Use three-coat method only, allowing the scratch coat to set and partially dry before applying brown coat.

5. *BRACETITE System Ceiling:* The three-coat method is recommended. If the two-coat system is used, a minimum of 20 minutes must be allowed before doubling back and the setting time of the basecoat must not exceed 3 hours.

6. *Monolithic Concrete:* Surfaces of walls and columns shall have a scratch coat of BONDCRETE, followed immediately with a brown coat of RED TOP Cement Plaster and sand 1:2 troweled into the BONDCRETE while it is soft and unset. Brown coat shall be brought out to a true level surface without an application of water. Cross-rake the surface. Ceiling surfaces shall have a coat of BONDCRETE scratched in thoroughly, doubled back to a true level surface. Cross-rake the surface.

7. *Portland Cement Basecoats* shall be applied in two coats. Scratch coat shall be cross-raked and after setting damp cured for not less than 48 hours. Brown coat shall be damp cured after setting for not less than 48 hours.

8. *Where plaster is flush* with metal base, metal door frames, etc., a groove shall be made at the junction to reduce the possibility of chipping. Basecoat plaster shall be cut free from these metal sections before the plaster sets.

X. PREPARATION OF LIME

a. **IVORY Lime** shall be mixed with approximately 5½ to 6 gallons of water for each 50 lb. bag. Machine mix or box soak for immediate use, or may soak overnite.

b. **GRAND PRIZE or RED TOP Lime** shall be box soaked or machine mixed using approximately 6 gallons of water per 50 lb. bag, and allowed to soak for 16 hours.

XI. PROPORTIONS OF FINISH COATS

a. **Gypsum gauged lime putty finish** shall be mixed in the proportions of 100 lbs. of gauging plaster to 200 pounds of dry lime. Over lightweight aggregate basecoats, ½ cu. ft. of perlite fines or 50 pounds of No. 1 silica sand per 100 pounds of gauging plaster shall be added.

b. **Medium hard STRUCTO-GAUGE lime putty finish** shall be mixed in the proportion of 100 pounds of STRUCTO-GAUGE to 200 pounds of dry lime.

c. **Hard STRUCTO-GAUGE lime putty finish** shall be mixed in the proportion of 100 pounds of STRUCTO-GAUGE to 100 pounds of dry lime.

d. **Standard Hard Keene's cement lime putty finish** shall be mixed in the proportion of 100 pounds of Keene's cement to 100 pounds of dry lime.

e. **Medium Hard Keene's cement lime putty finish** shall be mixed in the proportion of 100 pounds of Keene's cement to 50 pounds of dry lime.

f. **Extra Hard Keene's cement lime putty finish** shall be mixed in the proportion of 100 pounds of Keene's cement to 25 pounds of dry lime.

g. **Keene's-lime-sand finish** shall be mixed in the proportion of 100 pounds of Keene's cement to 50 pounds of dry lime and 400 pounds of sand.

h. **ORIENTAL Interior Colored Finish** shall be mixed with clean water only to proper application consistency.

i. **ORIENTAL Exterior Stucco** shall be mixed with clean water only to proper application consistency.

j. **TUFCON Finish and Catalyst** shall be mixed in accordance with the manufacturer's directions.

k. **HI-LITE Acoustical Plaster** shall be machine mixed to the proper consistency and density according to the manufacturer's directions.

l. **AUDICOTE Acoustical Plaster** shall be mixed for hand application or machine application according to the manufacturer's directions.

XII. APPLICATION OF FINISH COATS

a. **Trowel Finish coats** shall be scratched in thoroughly and immediately doubled back to fill out to a smooth, dense surface for decoration free of surface blemishes and irregularities. Thickness shall be no more than ⅛ inch. Keenes Cement Finishes shall be troweled until the material sets.

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b. **Float Finish coats** shall be scratched in thoroughly and immediately doubled back to a true, even surface. Float using a (shingle), (cork), (wood), (carpet) or (rubber) float to bring aggregate to the surface to produce a finish of uniform texture free of slick spots, cat faces, and other blemishes. Use water sparingly in natural color, and no water shall be used on colored finishes.

c. **Machine Applied Spray Finishes** shall be uniformly applied to produce a texture approved by the architect.

d. **TUFCON Finish** shall be machine applied to a thickness of 1/16 inch, in accordance with the manufacturer's directions.

e. **Acoustical Plasters** shall be applied in not less than two coats, to full ½ inch grounds, following the manufacturer's directions.

f. **Ornamental Plastering:** Ornamental plaster shall be executed in accordance with the full-sized details shown on the drawings. Cornices and moldings shall be run full, straight and true with molding plaster, using clean cut metal templets conforming to the profiles shown on the drawings. Lines shall be in alignment, with true intersections, and accurate mitres at corners and angles. Enriched ornamental work which cannot be run in place shall be cast with casting plaster in gelatine molds. The work shall be solidly backed with jute or burlap, shall be properly reinforced with galvanized iron, and shall be securely stuck and wired in place with copper wires not lighter than 16 gauge. All joints shall be carefully made and neatly pointed so as to be invisible. All rough spots shall be eliminated with fine sandpaper, and the entire work left in proper condition, ready for decoration.

XIII. FIREPROOFING PLASTER—RED TOP FIRECODE Plaster as manufactured by the UNITED STATES GYPSUM COMPANY shall be machine applied to the underside of all steel floor sections, beams and columns as shown on plans or herein specified. Surfaces shall be clean, dry and free of grease or oil. FIRECODE Plaster shall be mixed and applied according to the manufacturer's directions to thicknesses shown on plans but not less than:

Columns
Beams (caged)
Beams (direct)
Cellular Steel Floor

Note: Indicate the thicknesses required by selecting from data on page 9.

XIV. PATCHING—Point up around trim and other work. Cut out and patch defective and damaged plaster. Patching of plaster shall match existing work in texture and finish and joinings with plaster previously applied shall finish flush and smooth.

XV. COMPLETION—At the completion of the finish plaster work, all plaster shall be cleaned from beds, screeds, metal base and metal trim, leaving work ready for decoration by others. All plaster rubbish shall be removed from the building, leaving floors broom clean. Excess material, scaffolding, tools and other equipment shall be removed from the building and job site.

"STRUCTO-LITE," "RED TOP," "BONDCRETE," "PYROBAR," "ROCKLATH," "ORIENTAL," "FIRECODE," "IVORY," "GRAND PRIZE," "MORTASEAL," "CHESHIRE," "CHAMPION," "STAR," "BRACE-TITE," "TRUSSTEEL," "HI-LITE," "AUDICOTE," "TEXOLITE" and "USG" are registered trade-marks.

"STRUCTO-GAUGE" is a trade-mark owned by United States Gypsum and is used by it to distinguish products of its manufacture.

"STRUCTO-LITE" identifies the particular prepared plaster manufactured only by United States Gypsum.

"RED TOP" identifies the particular plasters and finishes manufactured only by United States Gypsum.

"BONDCRETE" identifies the particular plaster for concrete surfaces manufactured only by United States Gypsum.

"PYROBAR" identifies the particular gypsum partition tile manufactured only by United States Gypsum.

"ROCKLATH" identifies the particular gypsum lath or plaster base manufactured only by United States Gypsum.

"ORIENTAL" identifies the particular colored finishes manufactured only by United States Gypsum.

"FIRECODE" identifies the particular prepared plaster manufactured only by United States Gypsum.

"AUDICOTE" and "HI-LITE" identify the particular acoustical plasters manufactured only by the United States Gypsum Company.

"IVORY" and "GRAND PRIZE" identify the particular hydrated lime manufactured only by the United States Gypsum Company.

"CHESHIRE" identifies the particular high calcium finishing lime manufactured only by United States Gypsum.

"MORTASEAL" identifies the particular masonry lime manufactured by United States Gypsum.

"CHAMPION" and "STAR" identify the particular white gauging plasters manufactured only by the United States Gypsum Company.

"STRUCTO-GAUGE" identifies the particular prepared gauging plaster manufactured only by United States Gypsum.

"TRUSSTEEL" identifies the particular truss designed stud manufactured only by the United States Gypsum Company.

"BRACE-TITE" identifies the particular attachment clips manufactured only by the United States Gypsum Company.

"TEXOLITE" identifies the particular paint manufactured only by United States Gypsum Company.

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A.I.A. File 39-B

TECHNICAL INFORMATION

SOUND CONTROL PRODUCTS

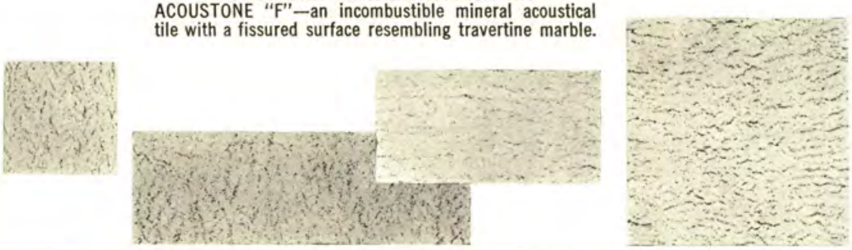
UNITED STATES GYPSUM

1963

USG
UNITED
STATES
GYPSUM

A.I.A. File 39-B

SOUND CONTROL PRODUCTS

PRODUCT	**ACOUSTONE* Mineral Acoustical Tile** ACOUSTONE "F"—an incombustible mineral acoustical tile with a fissured surface resembling travertine marble. 				**ACOUSTONE db** Superior sound attenuation and reflective insulation produced by the addition of foil backing to ACOUSTONE "F"
PAGES	4, 5, 6	4, 5, 6	4, 5, 6	4, 5, 6	6, 7
SIZE AND EDGE[1]	¾" x 12" x 12" ¾" x 12" x 24" SQ or BB(1 & 2)	¾" x 12" x 12" ¾" x 12" x 24" SQ or BB(2)	¾" x 12" x 23⅞"—SQ ¾" x 12" x 35⅞"—SQ ¾" x 24" x 23⅞"—SQ	¾" x 23⅞" x 23⅞"—SQ	Foil backing available on all ACOUSTONE "F" sizes.
INSTALLATION	Adhesive	Concealed Z-spline Concealed Accessible	Exposed Z-Spline	Exposed Grid	Same as recommended ACOUSTONE "F" metal suspension systems.
FINISH	Painted white or ivory (other colors available on special order)	Painted white or ivory (other colors available on special order)	Painted white or ivory (other colors available on special order)	Painted white or ivory (other colors available on special order)	Painted white or ivory (other colors available on special order)
LIGHT REFLECTANCE	86% White	86% White	86% White	86% White	86% White
NRC SPECIFICATION RANGE	.65-.75 Mtg. no. 1	.70-.80 Mtg. no. 7	.70-.80 Mtg. no. 7	.70-.80 Mtg. no. 7	.70-.80 Mtg. no. 7
SOUND ATTENUATION Eleven Frequency Average	48.0 db(3)	31.5 db (CZS)	29.7 db (12" x 24")	Data not available	45.6 db (12" x 24")
SOUND ATTENUATION Sound Transmission Class	47(3)	29 (CZS)	26 (12" x 24")	Data not available	40 (12" x 24") See page 7
HEAT CONDUCTIVITY	k=0.35	k=0.35	k=0.35	k=0.35	See page 6
FIRE RETARDENT CLASS	—	—	—	—	—
FIRE RESISTANCE RATINGS Federal Spec.	Class A	Class A	Class A	Class A	Class A
FIRE RESISTANCE RATINGS Flame Spread	15	15	15	15	15
MAINTENANCE	Cleaned easily with vacuum cleaner or damp sponge. Can be repeatedly spray or brush painted.	Cleaned easily with vacuum cleaner or damp sponge. Can be repeatedly spray or brush painted.	Cleaned easily with vacuum cleaner or damp sponge. Can be repeatedly spray or brush painted.	Cleaned easily with vacuum cleaner or damp sponge. Can be repeatedly spray or brush painted.	Cleaned easily with vacuum cleaner or damp sponge. Can be repeatedly spray or brush painted.
LIMITATIONS	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.

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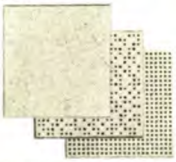
(1) BB—Butt Bevel Edge SQ—Square Edge
(2) ¾" x 12" x 24"—BB normally centerscored
(3) Cemented to ⅝" SHEETROCK* FIRECODE* Gypsum Wallboard.

*T.M. Reg. U.S. Pat. Off.

SOUND CONTROL PRODUCTS

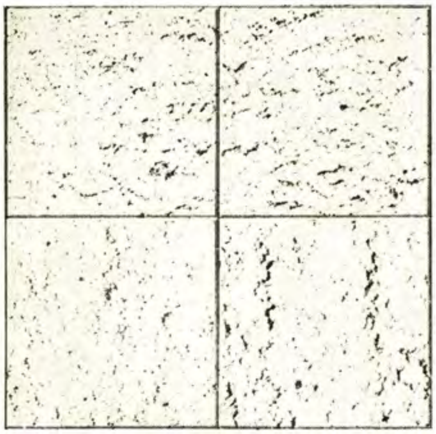
ACOUSTONE 90 and 120 Special ACOUSTONE Tile rated by UL for 1, 1½, and 2 hour designs. 	**MOTIF'D* ACOUSTONE TILE** Exclusive designer patterns are "etched" into the incombustible mineral surface. 	**ACOUSTONE FINESSE TILE** Selected ACOUSTONE created for fine textured ceiling appearance. 	**ACOUSTONE GLACIER TILE** Deeply textured ACOUSTONE providing factory controlled "rough" ceiling design. 	**AUDITONE*** Wood fiber acoustical tile in the three basic surface perforation patterns. 	**PERFATONE*** Perforated steel (or aluminum) metal pans with mineral fiber sound absorbing pads.
7, 12, 13	4, 5, 6, 7	6, 7	6, 7	16, 17	15
¾" x 12" x 12"—SQ or BB	¾" x 12" x 12"—SQ ¾" x 12" x 24"—SQ (Linea #38 only available in 12" x 24" size)	Available on all ACOUSTONE "F" sizes	¾" x 12" x 12"—SQ ¾" x 12" x 24"—SQ	½" x 12" x 12"—BB ¾" x 12" x 12"—BB ½" x 12" x 24"—T & G ¾" x 12" x 24"—T & G	2½" x 12" x 12" 2½" x 12" x 24" 2½" x 12" x 36" 2½" x 12" x 48" BB & Scored
Concealed Z-Spline Exact details, See pages 12 and 13	Adhesive Concealed Z-Spline Concealed accessible Exposed Z-Spline (#38)	Same as recommended ACOUSTONE "F" installation methods	Concealed Z-Spline	Adhesive; Staple, nail, or screw; and Metal suspension—T & G runner	Metal T-Bar Suspension
Painted white or ivory (other colors available on special order)	Painted white or ivory (other colors available on special order)	Painted white or ivory (other colors available on special order)	Painted white or ivory (other colors available on special order)	Painted white	Painted white or unpainted
86% White	70% White (Striated)	87% White	71% White	See page 16	70% White
.70-.80 Mtg. no. 7	.65-.75 Mtg. no. 1 .75-.85 Mtg. no. 7	.60-.70 Mtg. no. 7	.70-.80 Mtg. no. 1 .80-.90 Mtg. no. 7	See page 17	.80-.90 Mtg. no. 7
42.8 db (120—12" x 12")	43.2 db (#33—12" x 12")	38.1 db (12" x 12")	39.3 db (12" x 12")	44.7 db (12" x 24")	27.5 db
See page 7	See page 7	34 (12" x 12")	36 (12" x 12")	41 (12" x 24") See page 17	25
See page 12	k=0.35	—	—	k=0.38	—
"90"—1 hour (WOOD) "90"—1½ hour (CONCRETE) "120"—2 hour (CONCRETE)	—	—	—	—	—
Class A	Class A	Class A	Class A	Class C (FRF) Class D (Regular)	Class A
15	15	15	15	—	15
Cleaned easily with vacuum cleaner or damp sponge. Can be repeatedly spray or brush painted.	Cleaned easily with vacuum cleaner or damp sponge. Can be repeatedly spray or brush painted.	Cleaned easily with vacuum cleaner or damp sponge. Can be repeatedly spray or brush painted.	Cleaned easily with vacuum cleaner or damp sponge. Can be repeatedly spray or brush painted.	Cleaned with putty or paste type wallpaper cleaner. Can be repeatedly spray or brush painted.	Cleaned easily with soap and water or other commonly used paint cleaners. Can be repeatedly spray or brush painted.
Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.	Use aluminum units where water might impinge on surface.

*T.M. Reg. U.S. Pat. Off.

ACOUSTONE*
MINERAL ACOUSTICAL TILE

THE BEAUTY OF NATURAL FISSURES

Acoustone "F", mineral acoustical tile, is manufactured by binding mineral fibers into a lightweight, highly sound absorbent tile. The fissured surface closely resembles that of travertine marble. No two tiles are identical in texture; the pattern is as natural as the veining of fine marble or the grain of wood. Each tile is finish-painted at the factory. Available with accurately formed bevel or square edges.



Beveled Edge

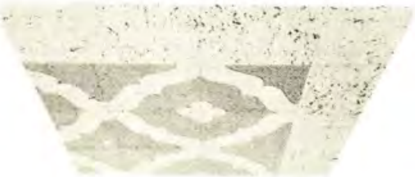
Square Edge

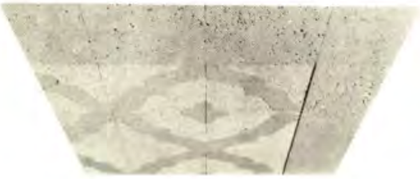
PATTERNS WITH TEXTURE

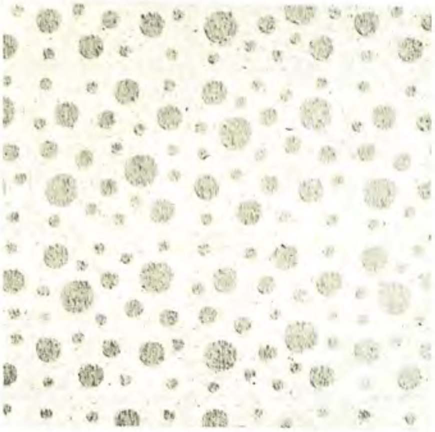
Motif'd* Acoustone mineral acoustical tile, is produced by altering the surface of standard Acoustone "F" tile by an exclusive USG process resulting in an integrally permanent decoration. The finished product is mill painted. The pattern selected is accented by the varying shadows caused by directional changes in the source of light rather than by differences in applied color. Custom patterns can be produced to meet individual requirements.

THE VARIABLE EFFECT

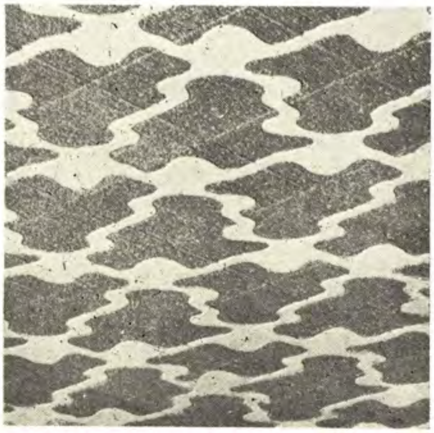
The unretouched photographs below were made of the same section of an installation of Motif'd Acoustone tile, but under two different lighting conditions. The upper picture shows contrast or color difference obtained under normal lighting; the lower picture shows how the contrast is reversed when light was shifted 180 degrees from that used in the upper view. Such changes in degrees of contrast are usually apparent in every Motif'd Acoustone installation. This "mobile" effect shifts, not only with light changes, but with changes in position of the observer. The pattern never becomes monotonous.



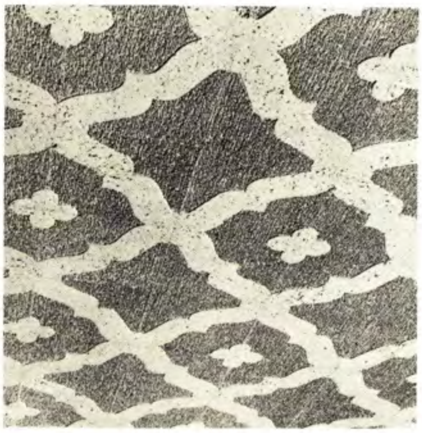




GALAXY design No. 33



FANTASIA design No. 40



GEORGIAN design No. 2

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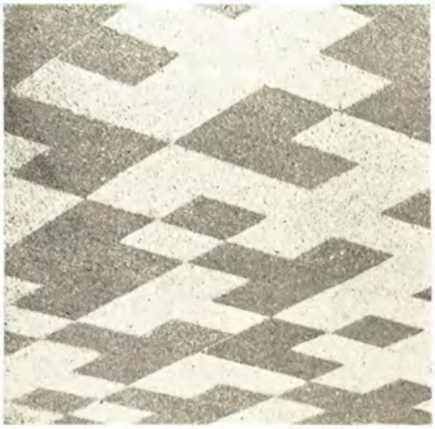
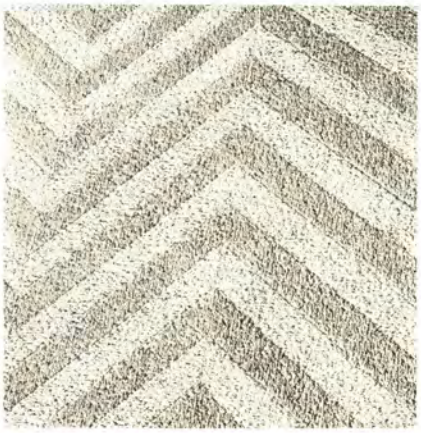
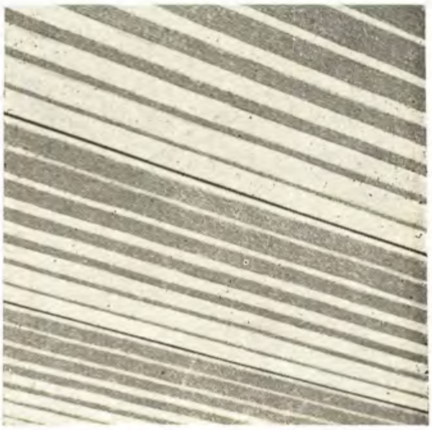


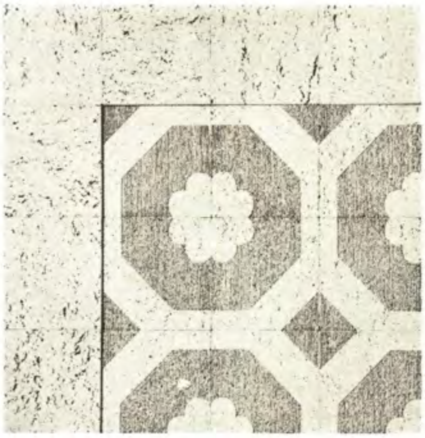
MOSAIC design No. 39



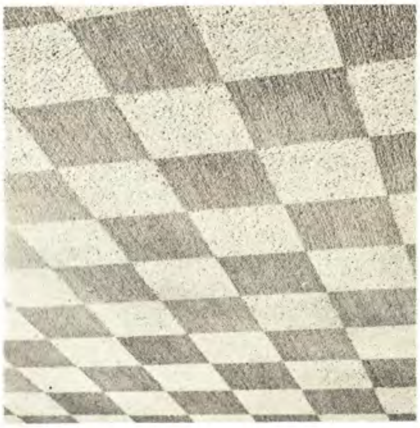
GROSGRAIN design No. 37



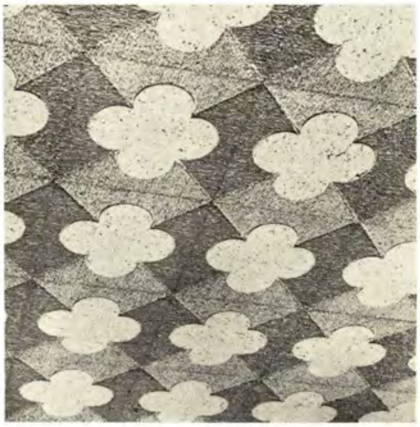
LINEA design No. 38



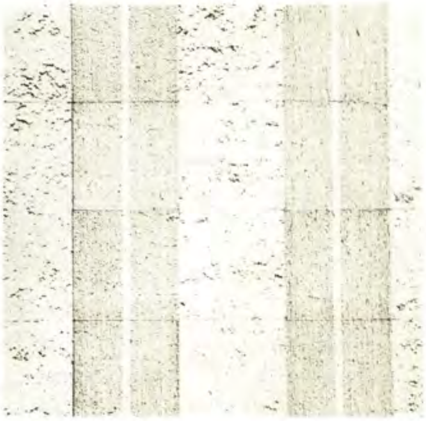
MEDALLION design No. 10



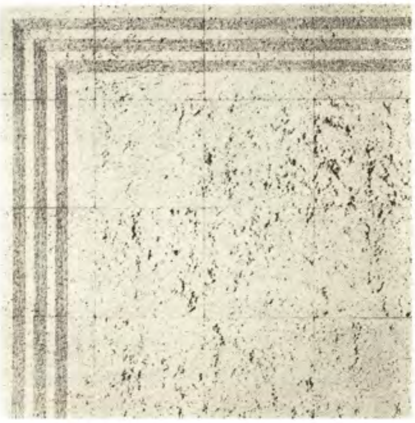
STRIATED design No. 19



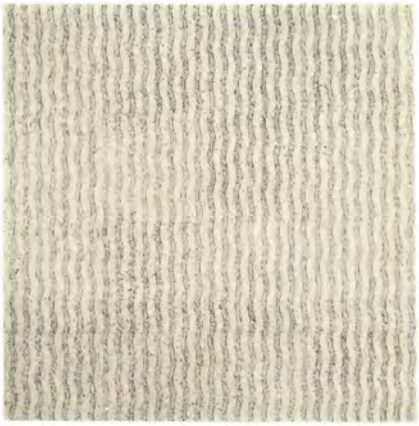
CLOVER LEAF design No. 5



BORDER design No. 32B



OUTLINE design No. 32A



TEXURA design No. 36

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*T. M. Reg. U. S. Pat. Off.

ACOUSTONE*
MINERAL ACOUSTICAL TILE

DESCRIPTION

Acoustone (¾″ thick) is available in sizes 12″ x 12″, 12″ x 24″, 12″ x 36″, and 24″ x 24″. Edges may be furnished either square or bevel. The 12″ x 24″ and 36″ can be scored to resemble 12″ x 12″ units. A standard kerf accommodates splines for both mechanical and adhesive applications.

FUNCTION AND UTILITY

Sound Absorption—see table
Sound Attenuation—see table

USG Tile have been tested in accordance with the ASTM E90-61T procedure recommended by the AMA. Both the eleven frequency db average and the sound transmission class are reported in the table. Of special interest is the high STL values of those USG Tile with the exclusive aluminum foil backing, generally superior to overage non-load bearing partitions.

Fire Resistance—Acoustone "F" carries a Class A rating in accordance with Fed. Spec. SS-A-118b and Interim Fed. Spec. SS-A-00118c and an ASTM E84-61T flame spread rating of "15," incombustible.

Thermal Resistance—Acoustone Tile "db" with the reflective foil back surface provides added resistance against winter heat loss—equal to a full inch of gypsum. The resistance to summer heat gain is even greater—equal to over an inch of wood fiber roof insulation. This "built-in" advantage in using Acoustone "db" can quickly be translated to dollar savings in heating and cooling costs.

Resistance (R) to heat flow†

	ACOUSTONE "db"	Regular ¾″ Mineral Tile (without foil)
Winter (upward)	4.07	3.36
Summer (downward)	7.61	3.98

†1960 ASHRAE Guide (includes tile and plenum air space)

Washability—Factory-painted Motif'd* Acoustone Tile and Acoustone "F" may be washed with a damp sponge or cleaned with a vacuum cleaner, chemical rubber sponge, (used dry), or putty or paste type wallpaper cleaner. Accidental spotting or soiling can usually be removed by this method before over-all redecoration is necessary.

Paintability—Motif'd Acoustone and Acoustone "F" mineral acoustical tile, may be brush or spray painted many times without appreciable loss of sound absorption at 500 cycles per second or in the Noise Reduction Coefficient. The effect of repeated coats of paint on Acoustone "F" and other materials may be found in Research Paper RP-1298 "Effect of Paint on Sound Absorption of Acoustical Materials," which is obtainable from the National Bureau of Standards, U. S. Department of Commerce, Washington, D. C. Oil, casein, resin emulsion or spirit thinned paints may be used with recommended painting procedures.

Resistance to Soiling and "Breathing." The smooth, painted finish of Motif'd Acoustone and Acoustone "F" resists soiling and limits objectionable air travel ("breathing") through the face of the tile.

LIMITATIONS OF USE

Motif'd Acoustone and Acoustone "F", mineral acoustical tiles, are designed for normal moisture conditions. They should not be used where they will be exposed to excessively high humidity. They should not be used below wainscot height or where they may be damaged by impact, abrasion or tampering. Acoustone should not be installed until moisture resulting from plastering, concrete or terrazzo work, etc., is no longer a hazard.

Modern architectural practice has often created a "critical lighting" condition for acoustical ceilings. It is important to visualize the final room furnishings and lighting when selecting a tile or suspension system.

ACOUSTONE FINESSE TEXTURE TILE

DESCRIPTION

Acoustone Finesse is a specially selected, natural fissured mineral tile. It is identical to Acoustone "F" in most of its physical characteristics. This product is designed to meet the desire for a finely textured ceiling surface by reducing the fissuring to a minimum acceptable for sound absorption values. It is available in all Acoustone "F" sizes and may be suspended by all recommended Acoustone "F" systems.

FUNCTION AND UTILITY

Acoustone Finesse technical data is in the table opposite. Fire resistance, thermal resistance, washability, paintability, soiling resistance, and limitations are basically the same as those of Acoustone "F" found on this page.

FINESSE

GLACIER

ACOUSTONE GLACIER TEXTURE TILE

DESCRIPTION

Acoustone Glacier is a factory controlled acoustical tile providing the deep texture generally available only from job applied "wet" construction. This rich texture conceals joint lines and provides a monolithic ceiling appearance. It is recommended that this tile be suspended by the USG concealed Z-spline method.

FUNCTION AND UTILITY

Acoustone Glacier technical data is in the table opposite. Fire resistance, thermal resistance, paintability, sailing resistance, and limitations are basically the same as those of Acoustone "F" found on this page. Because of the deep surface texture, washing this tile is not recommended.

*T.M. Reg. U.S. Pat. Off.

SOUND ABSORPTION COEFFICIENTS

ACOUSTONE* PRODUCT	MOUNTING	WEIGHT PSF	NRC SPEC. RANGE	SOUND ABSORPTION COEFFICIENTS AT cps					
				125	250	500	1000	2000	4000
ACOUSTONE "F"	1 7	1.30 1.39	.70-.80 .70-.80	.03 .68	.27 .67	.83 .65	.99 .84	.82 .87	.71 .74
MOTIF'D* ACOUSTONE	1 7	1.30 1.34	.65-.75 .75-.85	.03 .80	.26 .69	.77 .66	.93 .86	.83 .90	.78 .87
ACOUSTONE db	7	1.29	.70-.80	.58	.48	.67	.99	.92	.85
MOTIF'D ACOUSTONE db	7	1.35	.65-.75	.58	.46	.69	.91	.80	.76
ACOUSTONE 90	7	1.33	.75-.85	.83	.73	.68	.87	.93	.78
ACOUSTONE 120	7	1.32	.70-.80	.45	.46	.72	.97	.87	.90
ACOUSTONE GLACIER	1 7	1.42	.70-.80 .80-.90	.04 .60	.20 .73	.73 .73	.99 .93	.88 .88	.89 .90
ACOUSTONE db GLACIER	7	1.63	.75-.85	.30	.46	.77	.99	.89	.90
ACOUSTONE FINESSE	7	1.42	.60-.70	.78	.57	.59	.73	.70	.60

SOUND ATTENUATION DATA

ACOUSTONE PRODUCT	SUSPENSION SYSTEM	SIZE	SOUND TRANS. CLASS (1)	ELEVEN FREQUENCY AVERAGE	ATTENUATION (Decibels) AT cps										
					125	177	250	354	500	707	1000	1414	2000	2828	4000
ACOUSTONE "F"	Adhesive Concealed Z-Spline Exposed Z-Spline	12" x 12" 12" x 24" 12" x 24"	47 29 26	48.0 db 31.5 db 29.7 db	25 23 24	33 27 30	36 26 23	41 23 21	46 26 24	49 26 25	54 29 25	60 33 30	60 38 34	64 45 42	61 52 47
ACOUSTONE db	Concealed Z-Spline	12" x 12"	39	43.2 db	26	32	33	33	37	42	45	50	56	63	59
	Concealed Z-Spline	12" x 24"	40	45.5 db	31	36	33	34	41	44	49	54	56	64	59
	Exposed Z-Spline Exposed Grid	12" x 24" 24" x 24"	38 34	42.8 db 37.4 db	27 25	36 28	32 25	32 28	37 32	39 37	42 39	50 43	53 47	62 54	59 54
MOTIF'D ACOUSTONE db (No. 33)	Concealed Z-Spline	12" x 12"	39	43.2 db	26	34	32	33	38	41	45	50	54	62	59
ACOUSTONE 120	Concealed Z-Spline	12" x 12"	39	42.8 db	27	30	33	33	38	41	44	50	54	62	59
ACOUSTONE GLACIER db	Concealed Z-Spline	12" x 12"	36	39.3 db	24	30	31	30	34	37	41	45	50	58	54
ACOUSTONE FINESSE	Concealed Z-Spline	2" x 12"	34	38.1 db	26	30	30	28	30	32	35	41	48	59	60

(1) Rated in accordance with ASTM E90-61T
SOURCE: Official AMA acoustical testing laboratory

Mounting No. 1 Cemented to gypsum board
Mounting No. 7 Metal suspension system

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*T. M. Reg. U.S. Pat. Off.

ACOUSTONE*
MINERAL ACOUSTICAL TILE

1. MECHANICAL SUSPENSION

A. Concealed Z-Spline

System Attachment Methods:

1. Direct to wood furring (see detail in adjacent column)
2. To 1½″ carrying channel grillage (see detail opposite page)
3. Direct to bar joist (see detail opposite page)

DESCRIPTION

1. **Z-Splines Attached to Wood Furring Strips**—This method is particularly adaptable to existing ceilings where the surface is in such condition that it is impractical to attach Acoustone tile by cementing.

   This system is installed by nailing wood furring strips, maximum spacing of 4′-0″ on centers, and attaching Z-Splines to the furring strips with the No. 90 Clip. The No. 90 Clip may also be used to attach Z-Splines directly to existing wood joists or to wood furring strips nailed to exposed concrete surfaces.

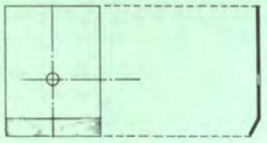
2. **Z-Splines Attached to 1½″ Carrying Channel Grillage**—This method offers an economical, simple, rigid construction and permits the use of flush joints where lighting conditions are not too severe.

   This suspension method provides metal spline supports in kerfs along the four edges of each unit. Splines also act as a continuous seal to minimize air travel through the joints. Self leveling of the tile joints is assured since intersecting corners of four adjacent units are supported on the same member.

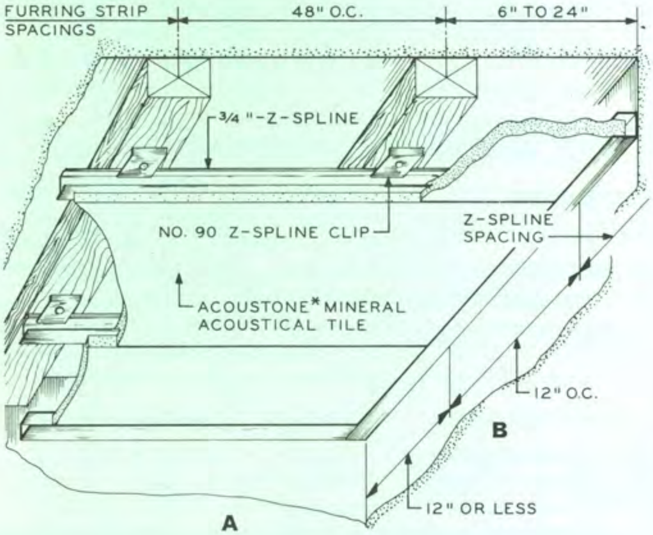
3. **Z-Splines Direct to Bar Joist**—This method may be employed when bar joists are spaced a maximum of 5 feet on center. The Z-Splines are attached direct to the bottom chord of the bar joist with the No. 87 clip. The saving gained by eliminating the 1½″ channel is often lost in "shimming" since bar joists seldom form a true ceiling plane. It is therefore suggested this method only be used where head room is critical.

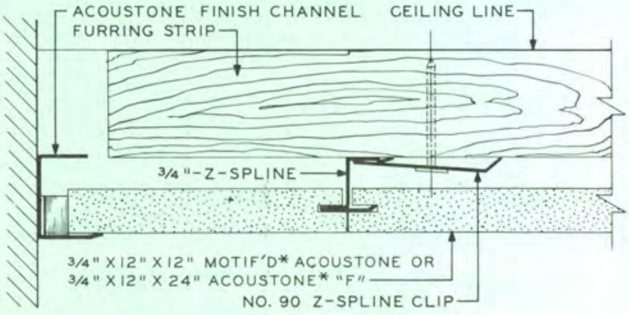
CONCEALED Z-SPLINES—Mounting No. 7

WOOD FURRING DIRECT ATTACHMENT OF Z-SPLINES

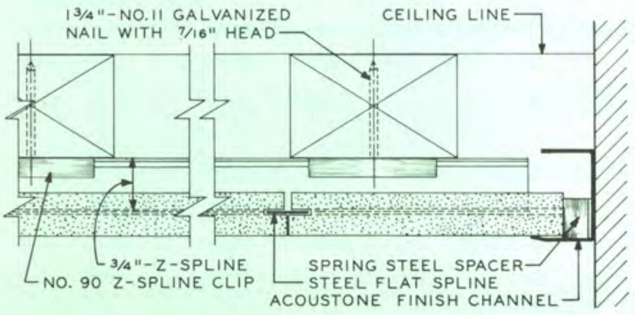


NO. 90 Z-SPLINE CLIP





DETAIL AT WALL—A



DETAIL AT WALL—B

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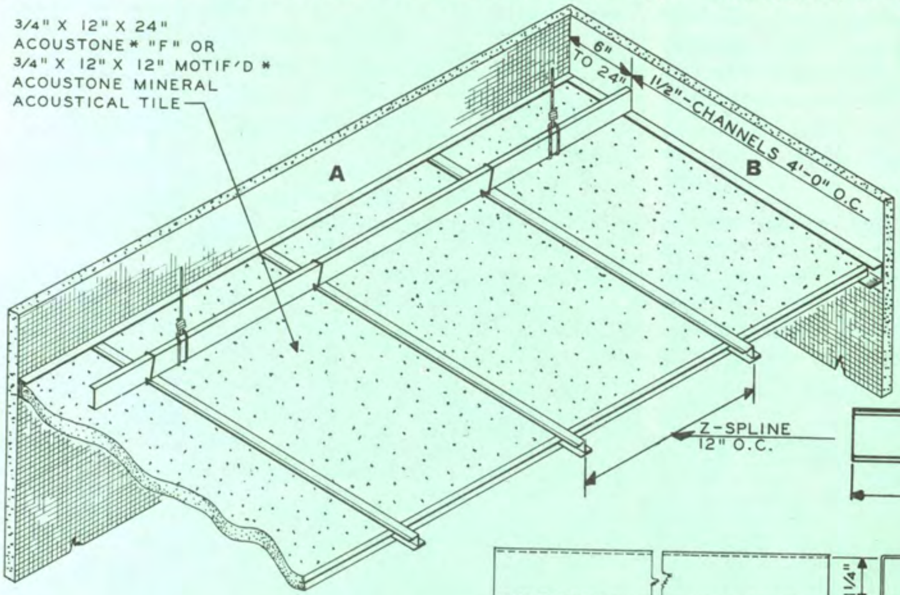
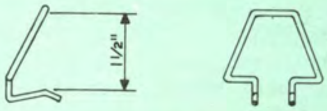
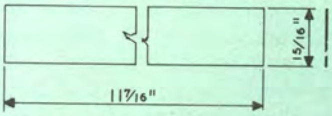
*T.M. Reg. U.S. Pat. Off.

METAL SUSPENSION
CONCEALED Z-SPLINE ATTACHMENT OF 1½″ CARRYING CHANNELS

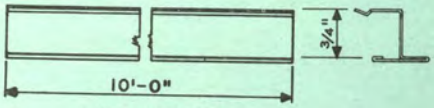




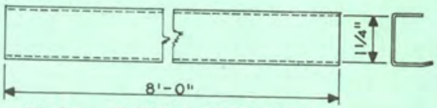
NO. 82A CLIP



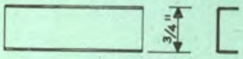
24-GA. FLAT SPLINE



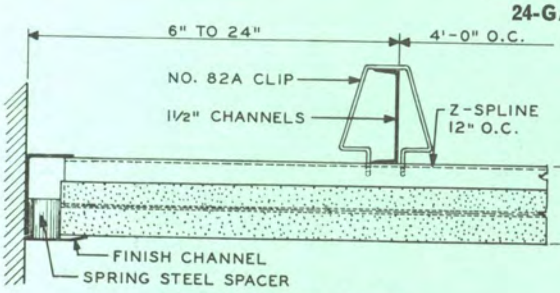
¾″ Z-SPLINE



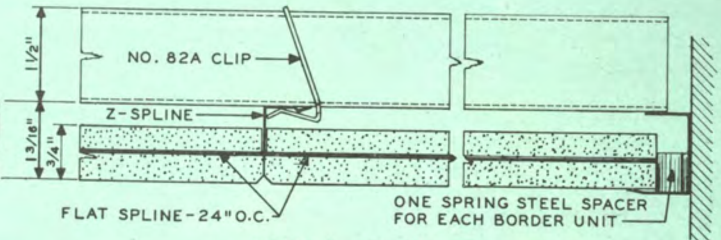
24-GA. FINISH CHANNEL



¾″ Z-SPLINE SPLICE

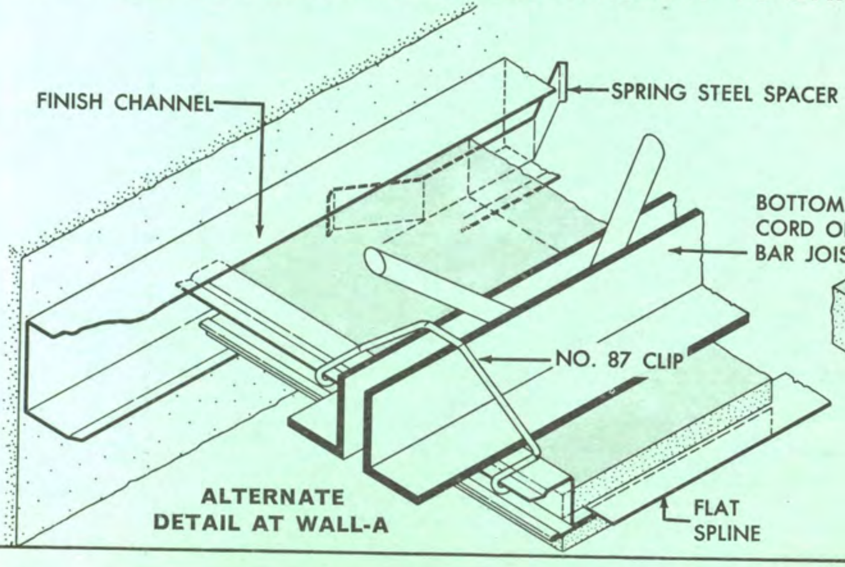


DETAIL AT WALL—A

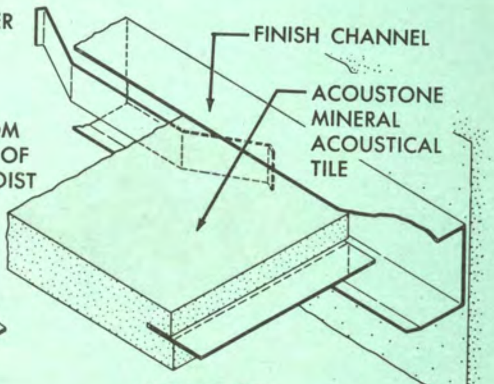


DETAIL AT WALL—B

CONCEALED Z-SPLINES ATTACHED DIRECTLY TO BAR JOIST



ALTERNATE DETAIL AT WALL-A



ALTERNATE DETAIL AT WALL-B

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*T. M. Reg. U. S. Pat. Off.

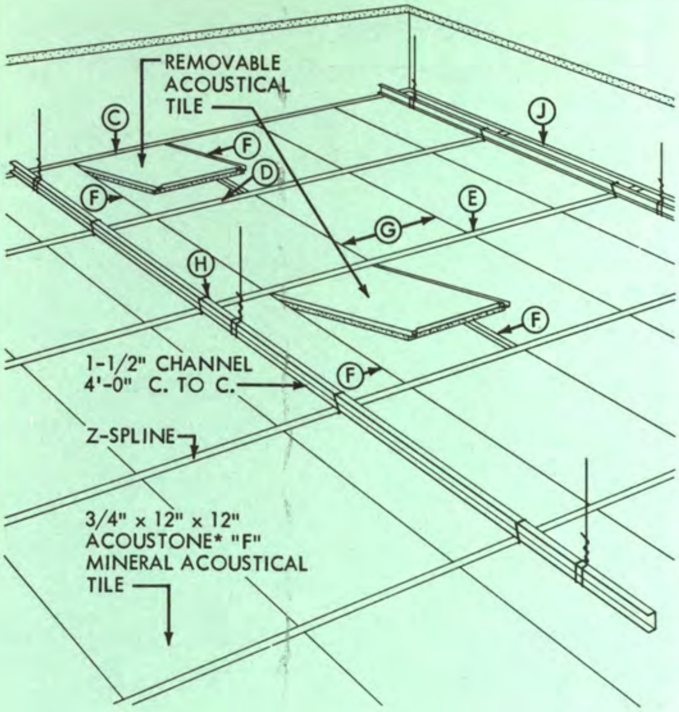
ACOUSTONE*
MINERAL ACOUSTICAL TILE

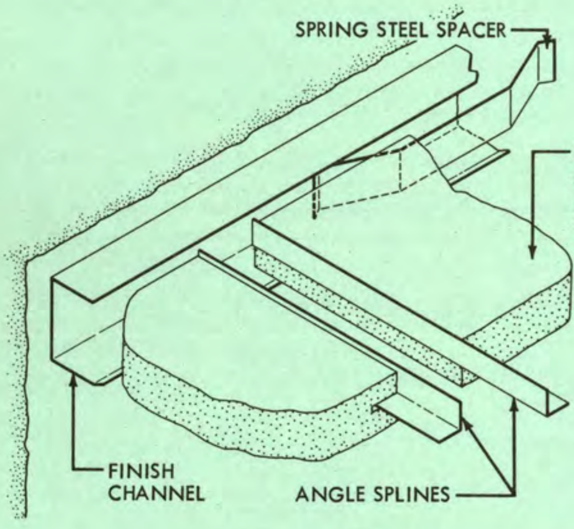
1. MECHANICAL SUSPENSION

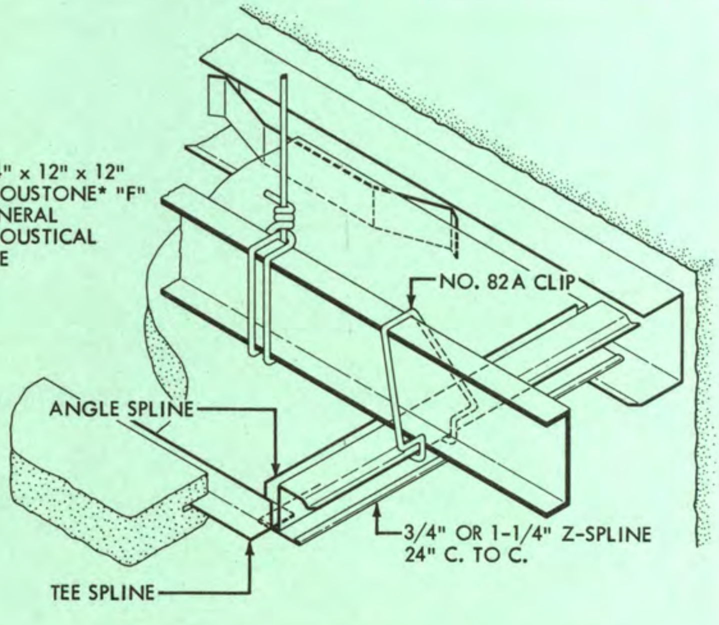
B. Concealed Accessible Z-Spline System

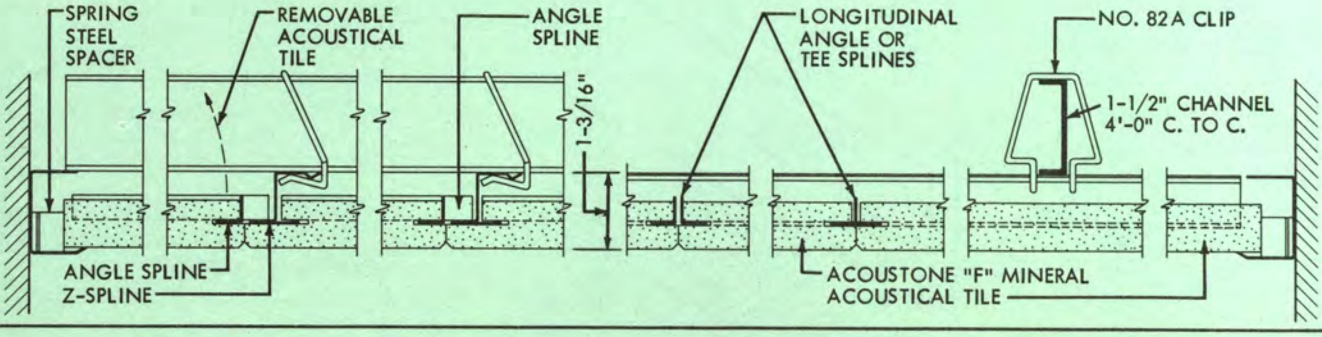
The concealed accessible system is a modified Z-spline method designed to provide complete (or partial, where desired) accessibility to the plenum area above the ceiling. Modern architectural demands requiring use of the plenum for piping, electrical equipment, sheet-metal work, and other mechanical devices have made accessibility a much desired feature of the acoustical ceiling.

This system completely conceals the fact that tile are removable for access. The finished ceiling appearance is that of an Acoustone "F" mineral tile ceiling with beveled edges. Due to the special characteristics of the system only bevel edge tile is recommended. It is further suggested that ¾", 12" x 24" tile be used, although the system can accommodate ¾", 12" x 12" tile as well.


REMOVABLE ACOUSTICAL TILE
C
F
D
J
F
E
G
H
F
F
1-1/2" CHANNEL 4'-0" C. TO C.
Z-SPLINE
3/4" x 12" x 12" ACOUSTONE* "F" MINERAL ACOUSTICAL TILE






SPRING STEEL SPACER
REMOVABLE ACOUSTICAL TILE
ANGLE SPLINE
1-3/16"
LONGITUDINAL ANGLE OR TEE SPLINES
NO. 82A CLIP
1-1/2" CHANNEL 4'-0" C. TO C.
ANGLE SPLINE
Z-SPLINE
ACOUSTONE "F" MINERAL ACOUSTICAL TILE

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*T.M. Reg. U.S. Pat. Off.

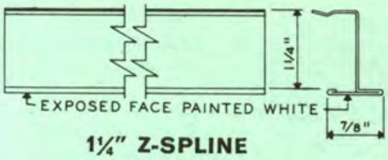
1. MECHANICAL SUSPENSION

C. "E-Z-S" Z-Spline Metal Suspension System

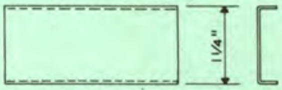
E-Z-S Suspension System. This method is used where access is required to the area above the ceiling for adjusting valves, electrical equipment, controls of air conditioning equipment, or for other reasons.

Because of its ease of installation, this method is economical and provides a low cost acoustical ceiling with complete accessibility to the area above the ceiling. Any type lighting arrangement is easily adaptable to the E-Z-S Suspension System. Lighting troffers can be installed easily and economically. Full advantage can be taken of the economy of gravity-held diffusers laid directly in the Z-Spline to replace equivalent area of Acoustone* tile. This permits maximum flexibility of lighting arrangement. See details in adjacent columns.

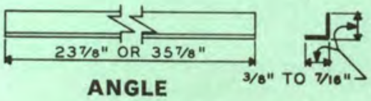
"E-Z-S" SUSPENSION SYSTEM—Mounting No. 7



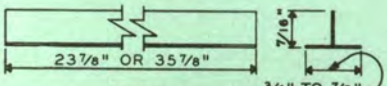
1¼" Z-SPLINE



1¼" Z-SPLINE SPLICE

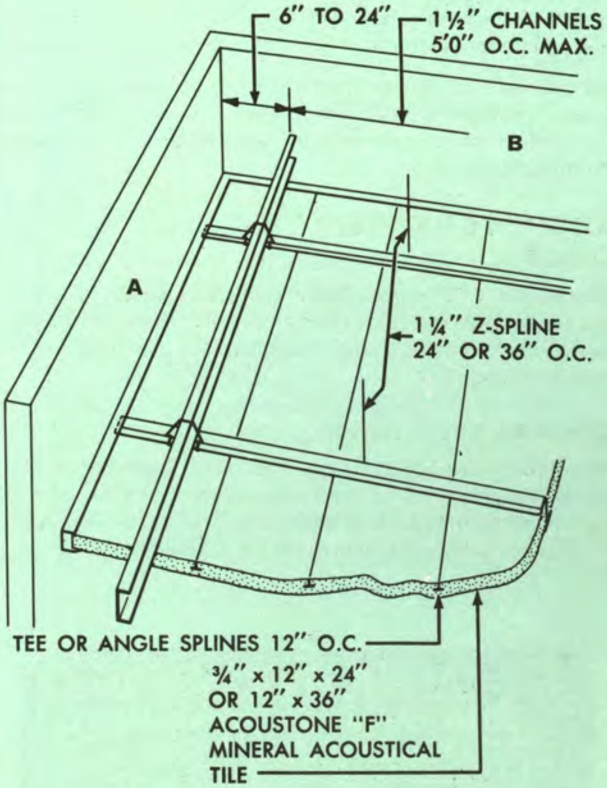


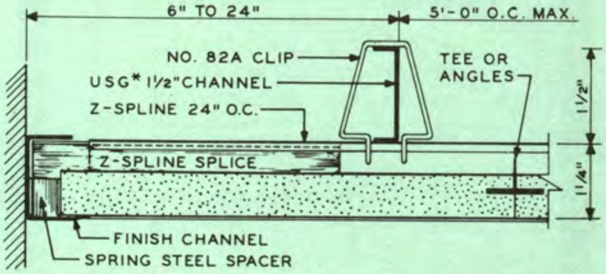
ANGLE



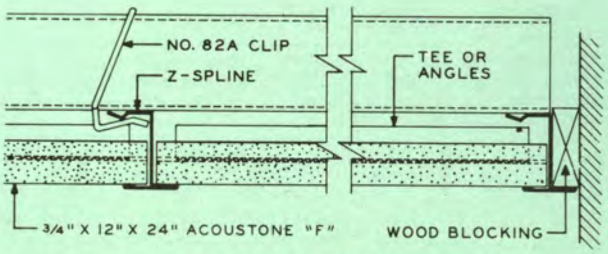
TEE

METAL SUSPENSION
"E-Z-S" SUSPENSION SYSTEM





DETAIL AT WALL-A



DETAIL AT WALL-B

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*T. M. Reg. U. S. Pat. Off.

ACOUSTONE*
MINERAL ACOUSTICAL TILE

ACOUSTONE "90" TILE
1 & 1½-HOUR

Acoustone "90" suspended on the USG Concealed Z-Spline System provides a 1-hour (Design No. 15) rating for wood joist and floor construction. See details in the adjacent column.

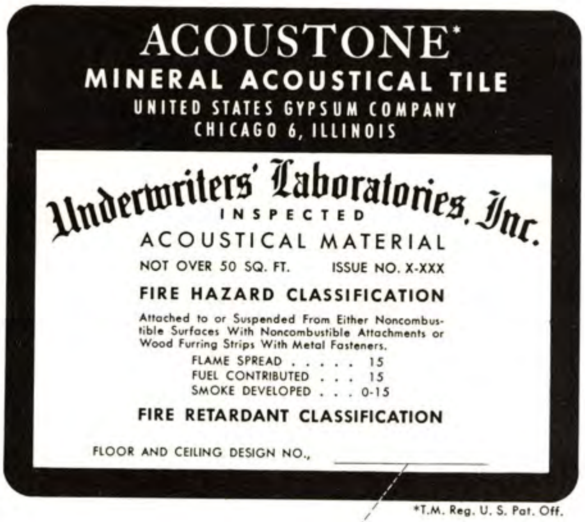
Acoustone "90" suspended on the USG Concealed Z-Spline System provides a 1½-hour (Design No. 6) rating for bar joist and concrete floor (or roof) construction. See details on the opposite page.

ACOUSTONE "120" TILE
2-HOUR

Acoustone "120" suspended on the USG Concealed Z-Spline System provides a 2-hour (Design No. 41) rating for bar joist and concrete floor (or roof) construction. See details on the opposite page.

GENERAL TEST DATA

Fire Rating—The Acoustone "90" and Acoustone "120" fire ratings are based on the standards for Fire Tests of Building Construction and Materials Fire Endurance Test ASTM E-119, conducted by Underwriters' Laboratories, Inc.



ACOUSTONE*
MINERAL ACOUSTICAL TILE
UNITED STATES GYPSUM COMPANY
CHICAGO 6, ILLINOIS

Underwriters' Laboratories, Inc.
INSPECTED
ACOUSTICAL MATERIAL
NOT OVER 50 SQ. FT. ISSUE NO. X-XXX

FIRE HAZARD CLASSIFICATION

Attached to or Suspended From Either Noncombustible Surfaces With Noncombustible Attachments or Wood Furring Strips With Metal Fasteners.

FLAME SPREAD 15
FUEL CONTRIBUTED . . . 15
SMOKE DEVELOPED . . . 0-15

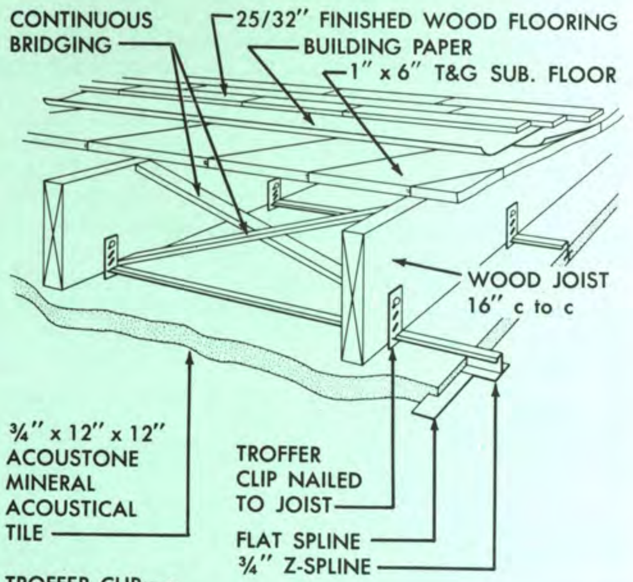
FIRE RETARDANT CLASSIFICATION

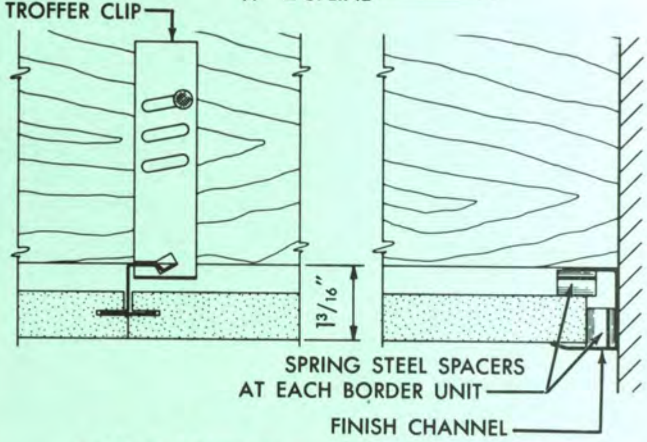
FLOOR AND CEILING DESIGN NO., ________

*T.M. Reg. U. S. Pat. Off.

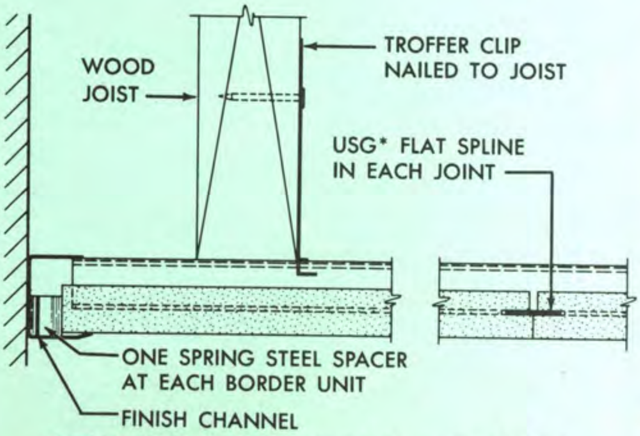
PRODUCT	Test No.	Design No.	CONSTRUCTION
ACOUSTONE "90"	4351-3	15	Wood joist and wood floor
ACOUSTONE "90"	4351-1	6	Steel bar joist and concrete floor
ACOUSTONE "120"	4351-4	41	Steel bar joist and concrete floor

FIRE RATED WOOD FRAME CONSTRUCTION


CONTINUOUS BRIDGING
25/32" FINISHED WOOD FLOORING
BUILDING PAPER
1" x 6" T&G SUB. FLOOR
WOOD JOIST 16" c to c
¾" x 12" x 12" ACOUSTONE MINERAL ACOUSTICAL TILE
TROFFER CLIP NAILED TO JOIST
FLAT SPLINE
¾" Z-SPLINE



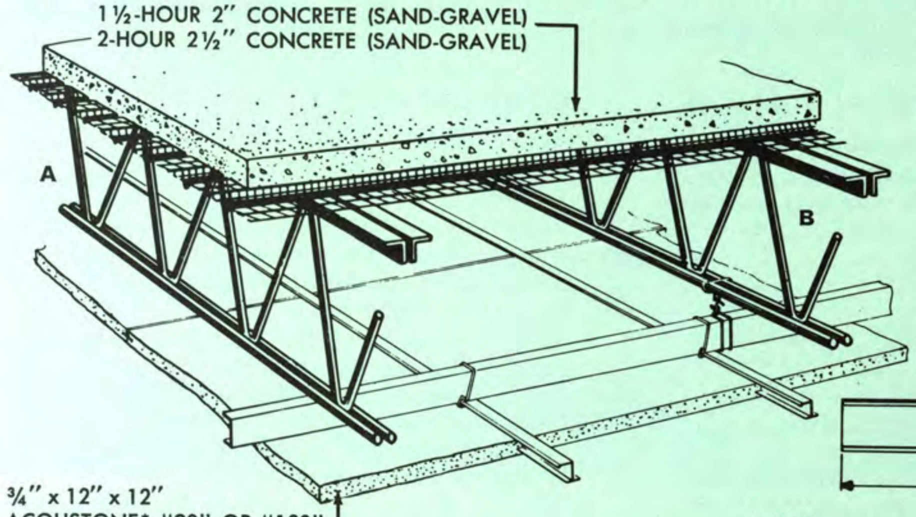
CROSS SECTION PARALLEL TO JOIST

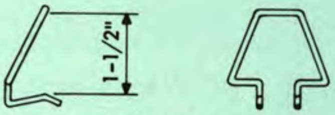

WOOD JOIST
TROFFER CLIP NAILED TO JOIST
USG* FLAT SPLINE IN EACH JOINT
ONE SPRING STEEL SPACER AT EACH BORDER UNIT
FINISH CHANNEL

CROSS SECTION TRANSVERSE TO JOIST

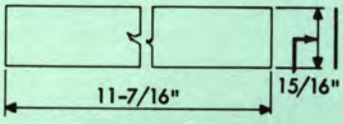
*T. M. Reg. U. S. Pat. Off.

FIRE RATED—STEEL AND CONCRETE CONSTRUCTION

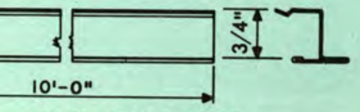

1½-HOUR 2″ CONCRETE (SAND-GRAVEL)
2-HOUR 2½″ CONCRETE (SAND-GRAVEL)
A
B
¾″ x 12″ x 12″
ACOUSTONE* "90" OR "120"
MINERAL ACOUSTICAL
TILE



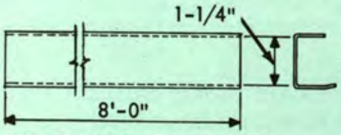
USG NO. 82A CLIP



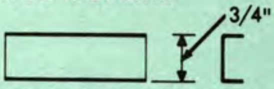
USG FLAT SPLINE



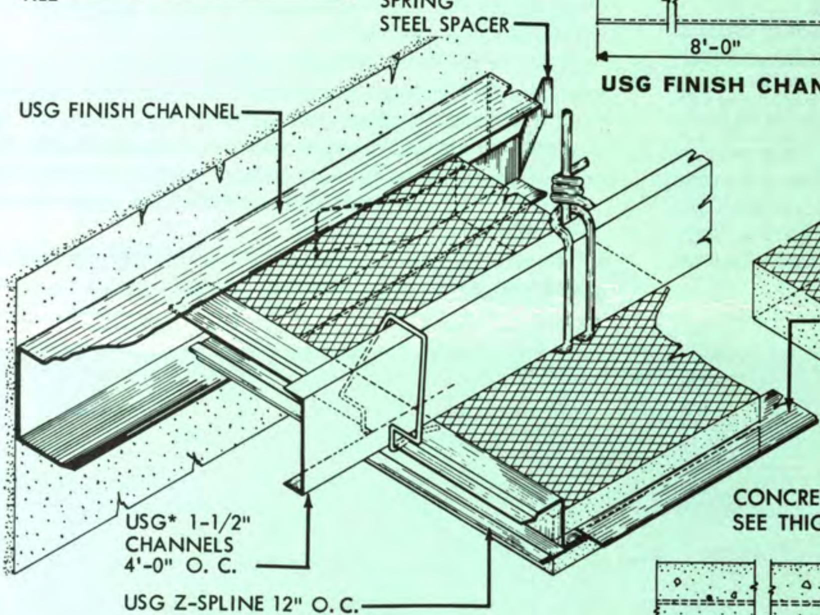
¾″ USG Z-SPLINE



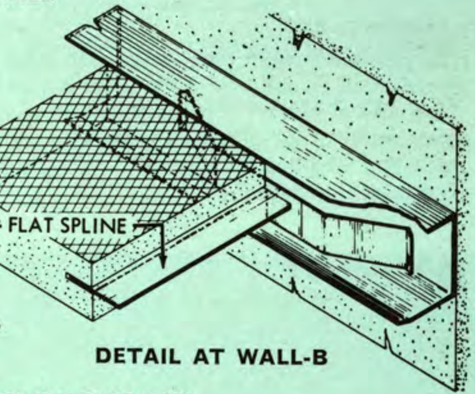
USG FINISH CHANNEL



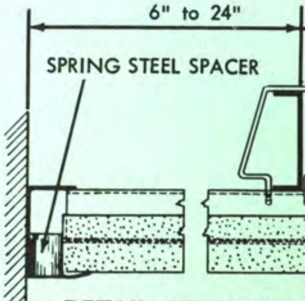
¾″ Z-SPLINE SPLICE



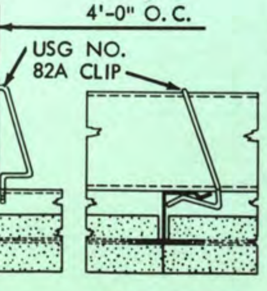
DETAIL AT WALL-A



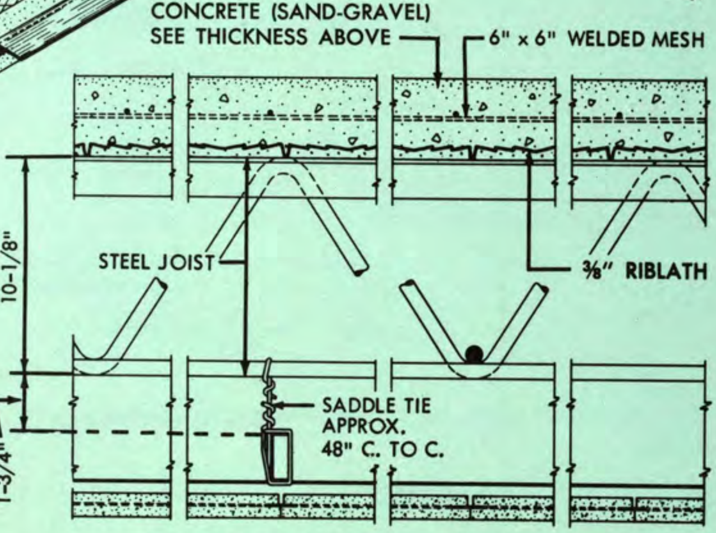
DETAIL AT WALL-B



DETAIL AT WALL-A



CLIP DETAIL



CROSS SECTION THRU PLENUM

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*T. M. Reg. U. S. Pat. Off.

2. ADHESIVE APPLICATION

Application with adhesive is a widely used method and is recommended where a suitable base exists.

BASES FOR ADHESIVE APPLICATION

A. ACOUSTONE Cemented to Gypsum Boards

Where an incombustible base is required, MOTIF'D* ACOUSTONE and ACOUSTONE can be adhesively applied to several gypsum board bases. They may be installed by the following methods:

1. Z-Board BAXBORD* Backing Board SHEETROCK* Gypsum Wallboard SHEETROCK FIRECODE* Wallboard BAXBORD FIRECODE ROCKLATH* Plaster Base	Nailed to Wood Members
2. Z-Board BAXBORD SHEETROCK FIRECODE BAXBORD FIRECODE	Attached by Screws or Nails to Metal Channels

B. Plaster

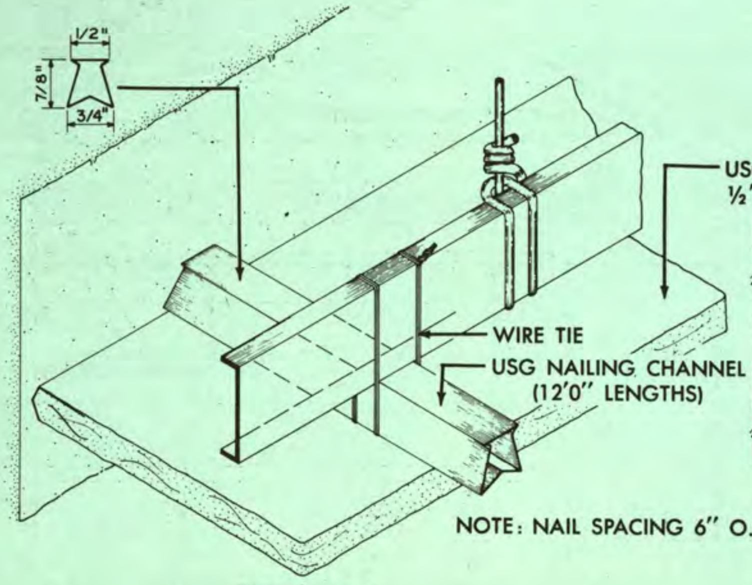
On *new work:* a full thickness of rodded brown coat of gypsum plaster in a clean, dry, level state provides an excellent base.

On *existing work:*

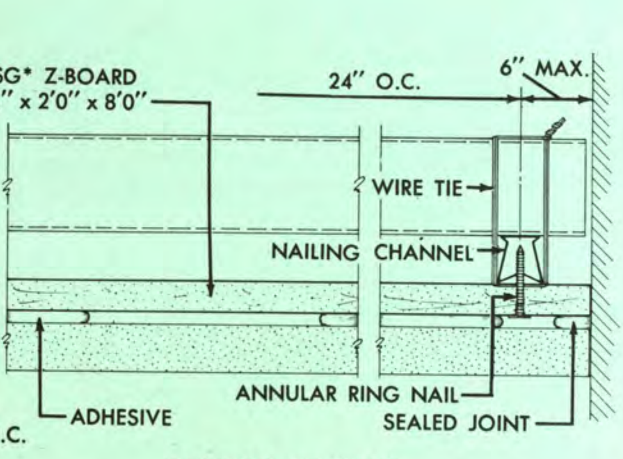
1. *Old lime putty finish* that has been in place for a year or more offers a good base if the finish is well bonded to the base coat of plaster. If it is not well bonded, consider the application of Z-Splines attached to wood furring strips with No. 90 Clips. (Note mechanical suspension systems and details on page 9.)
2. A good quality paint well bonded to sound plaster and in place not less than 6 months will usually give excellent results.

LIMITATIONS OF USE

1. *Size of Units.*
   Tile should not exceed 12″ x 12″ for ceilings or 12″ x 24″ for walls.
2. *New lime putty* finish may have free lime on the surface which can cause saponification of oils and resins in the adhesive. For this finish a combination of adhesive and nailing is recommended.
3. Hard oil (sometimes called gloss oil) when used as a size for calcimine may react with the solvents of the adhesive and therefore is an unsatisfactory base. In this case, a combination of nailing and adhesives must be used. The acoustical contractor can determine by job testing when to augment the adhesive with nailing.
4. The use of ROCKLATH* without plaster is not recommended where job conditions, particularly moisture conditions, are unsuitable. Accordingly, ACOUSTONE, mineral acoustical tile, shall be applied to such a base only when the installation of the base is made under the supervision of and to the satisfaction of the USG acoustical contractor.
5. Unless it is possible to determine the moisture condition of a concrete surface, the adhesive application of any acoustical tile to a concrete slab is not recommended. (For a more economical and secure method of attaching ACOUSTONE to concrete slabs, consider the method under B-1 above.)
6. The adhesive application of ACOUSTONE directly to wood strips or plywood is not recommended.


1/2"
7/8"
3/4"
USG* Z-BOARD ½" x 2'0" x 8'0"
WIRE TIE
USG NAILING CHANNEL (12'0" LENGTHS)
NOTE: NAIL SPACING 6" O.C.

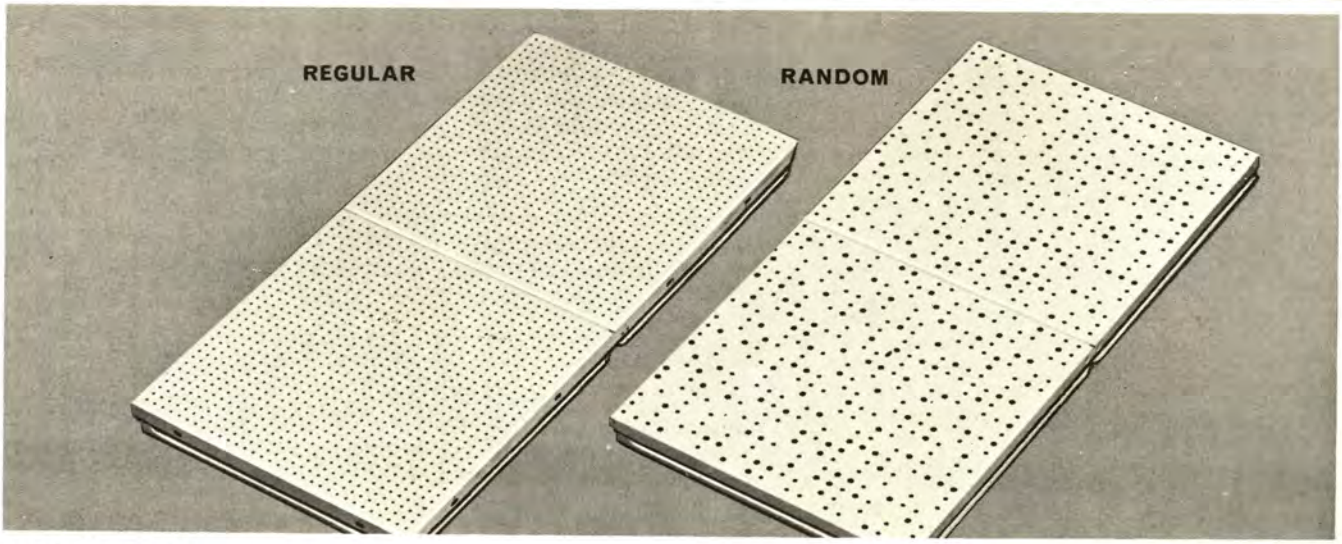
ISOMETRIC



SECTION AT WALL

*T.M. Reg. U.S. Pat. Off.

PERFATONE*
ACCOUSTICAL TILE UNITS



DESCRIPTION

PERFATONE Acoustical Units are perforated metal pans, 12″ x 12″, 12″ x 24″, 12″ x 36″, or 12″ x 48″ in size, scored to simulate 12″ x 12″ units. Enclosed within the metal units are mineral fiber sound-absorbent pads, supported on formed wire mesh which provides an air space between the pad and the metal facing.

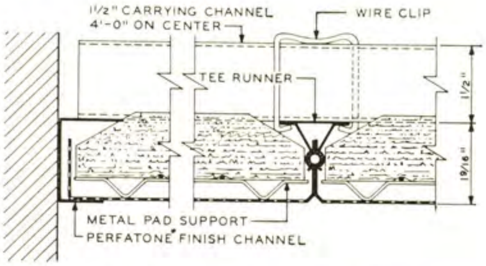
PERFATONE units are available with varying paint coatings on cold-rolled or electro-zinc coated steel, and in aluminum.

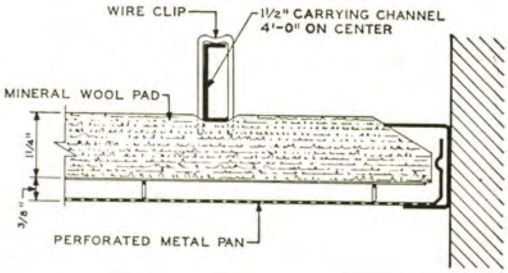
The above PERFATONE units are also available unperforated for use as border tile or decorative effects.

LIMITATIONS OF USE

In areas of high humidity or where moisture might impinge against the acoustical surface, Aluminum PERFATONE Acoustical Units with galvanized fittings, or a different architectural design should be considered.

INSTALLATION—Detail showing metal finishing channel at wall

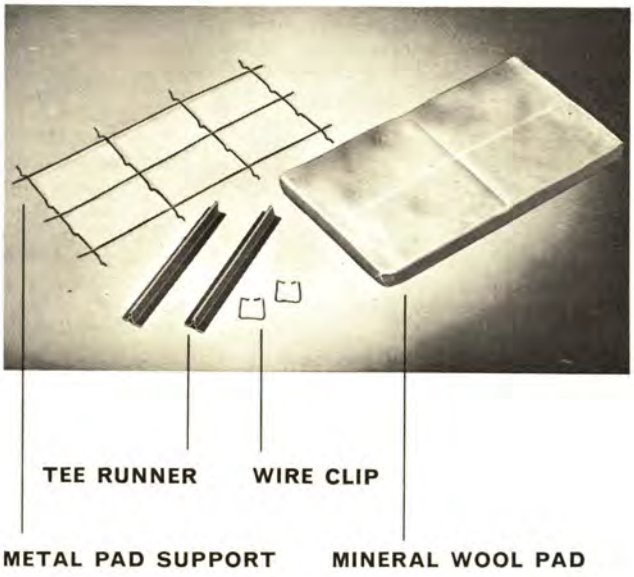




SOUND ABSORPTION

MOUNT-ING	THICK-NESS	Coefficients at Cycles Shown						NRC Spec. Range
		125	250	500	1000	2000	4000	
7	2½″	.90	.77	.86	.99	.75	.60	.80–.90

Test Source: Acoustical Materials Association
Pads were tested in perforated enameled metal units with pad supports.
LIGHT REFLECTION—White 70%
FIRE RESISTANCE—"INCOMBUSTIBLE" as Tested by Official A.M.A. Laboratory



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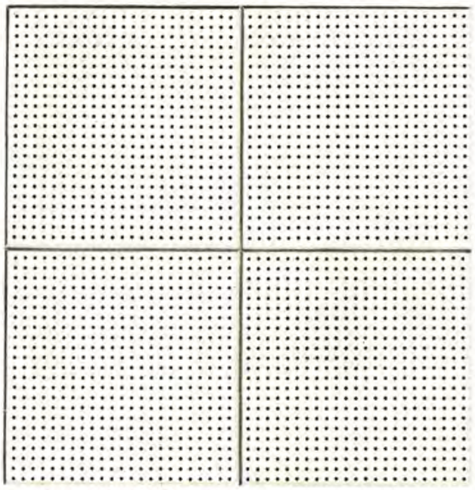
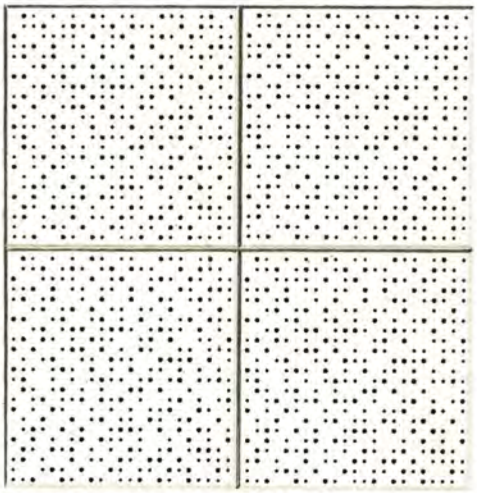
*T. M. Reg. U. S. Pat. Off.

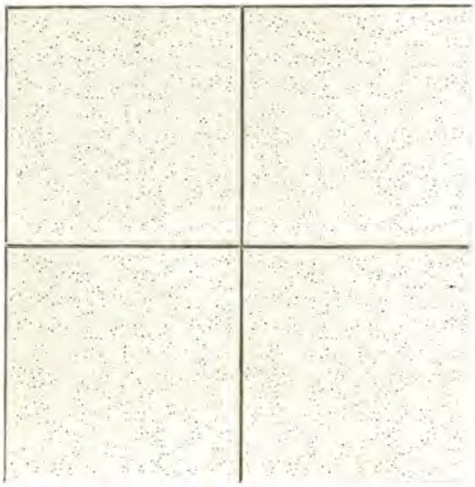
AUDITONE*
WOOD FIBER ACOUSTICAL TILE



Perforated AUDITONE



Random Perforated AUDITONE



Pin Perforated AUDITONE

DESCRIPTION

AUDITONE Wood Fiber Acoustical Tiles are light in weight, low in cost, and designed to give maximum acoustical efficiency. Each unit is finish-painted white at the factory and is available accurately formed with butt bevel or tongue and groove edges. AUDITONE Wood Fiber Acoustical Tile is made in three styles, Perforated, Random Perforated, or Pin Perforated.

Sizes—AUDITONE Wood Fiber Acoustical tile is available in ½″ or ¾″ thicknesses with the exception of Slotted AUDITONE which is available in ¾″ thickness only. All styles are produced in 12″ x 12″ butt bevel or 12″ x 24″ tongue and groove tiles. 12″ x 24″ tiles are center scored to represent 12″ x 12″ units.

Perforated AUDITONE—Wood Fiber Acoustical Tile has 529 holes, 3/16″ in diameter, cleanly drilled into each square foot of tile.

Random Perforated AUDITONE—Wood Fiber Acoustical Tile has 135 holes ¼″ in diameter, and 188 holes 3/16″ in diameter cleanly drilled into each square foot of tile.

Pin Perforated AUDITONE—Wood Fiber Acoustical Tile has over 1,000 pin perforations in each square foot of tile.

Edge Treatment—All types of AUDITONE are made with butt bevel edges for cementing to proper bases without supplementary nailing. They are also made with tongue and groove edges designed to better utilize the economical methods available for stapling, screwing, or nailing wood fiber tile directly to wood joists, studs, or nailing strips. The tongue and groove edges assure level joints and smooth ceiling appearance.

FUNCTION AND UTILITY

Sound Absorption depends upon the thickness of the tile and the type of mounting. See technical data on the opposite pages for sound absorption values.

Paint and Color—All AUDITONE is finish-painted white at the factory.

Maintenance—AUDITONE can be repeatedly brush or spray painted following recommended paint procedures with oil, resin emulsion casein, or any of the commercial types of paint without appreciable loss of sound absorption at 500 cycles per second or in the Noise Reduction Coefficient. AUDITONE wood fiber acoustical tile can be cleaned with putty or paste type wallpaper cleaners.

Resistance to Soiling and Breathing—The smooth, painted finish of AUDITONE Wood Fiber Acoustical tile resists soiling. AUDITONE with tongue and groove edges minimizes objectionable air travel through the joints when used on suspended nailing strips.

Thermal Conductivity—AUDITONE has a k factor of 0.38.

Fire Resistance—(1) Pin Perforated, Perforated, and Random Perforated AUDITONE, when painted with a standard USG mill finish, are rated "Class D" by Federal Specification SS-A-118b and Interim Federal Specification SS-A-00118c.

(2) Pin Perforated, Perforated, and Random Perforated AUDITONE, when mill-finished with USG flame-resistant paint, are rated "Class C" by Federal Specification SS-A-118b, and Interim Federal Specification SS-A-00118c.

Perforated—AUDITONE wood fiber tile has a light reflection of 75% as tested by AMA Laboratories.

Random Perforated AUDITONE has a light reflection of 77% as tested by AMA Laboratories.

Pin Perforated AUDITONE tile has a light reflection of 82% as tested by AMA Laboratories.

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SOUND ABSORPTION COEFFICIENTS

Test Source: Acoustical Materials Association

THICKNESS	MOUNTING	COEFFICIENTS AT CYCLES SHOWN						NRC SPEC. RANGE	WEIGHT PSF
		125	250	500	1000	2000	4000		
PERFORATED AUDITONE* TILE									
½″	1	.14	.23	.66	.68	.78	.76	.55–.65	.83
	2	.18	.61	.51	.62	.78	.74	.60–.70	.83
¾″	1	.24	.42	.64	.69	.81	.79	.60–.70	.99
	2	.23	.62	.56	.72	.83	.85	.65–.75	.99
	7	.36	.35	.62	.88	.83	.74	.60-.70	.96
RANDOM PERFORATED AUDITONE TILE									
½″	1	.25	.28	.62	.58	.66	.68	.50–.60	.87
	2	.15	.67	.46	.52	.66	.71	.55–.65	.87
¾″	1	.19	.38	.68	.67	.78	.73	.60–.70	.98
	2	.25	.65	.51	.73	.76	.78	.60–.70	.98
	7	.48	.43	.57	.76	.81	.69	.60–.70	1.00
PIN PERFORATED AUDITONE TILE									
½″	1	.14	.25	.68	.73	.55	.35	.50–.60	.77
	2	.17	.50	.63	.58	.56	.34	.50–.60	.77
¾″	1	.17	.38	.78	.71	.55	.46	.55–.65	.92
	2	.15	.65	.66	.65	.51	.40	.55–.65	.88
	7	.31	.40	.64	.72	.57	.62	.55–.65	.92

PRODUCT	Attenuation (Decibels) Coefficients At cps										
	125	177	250	354	500	707	1000	1414	2000	2828	4000
¾″ Random Perforated AUDITONE	26	38	33	35	43	46	50	55	55	62	49

SOURCE: AMA ceiling sound transmission test—two room method. Mounting No. 7
11 Frequency Average = 44.7 db; Sound Trans. Class = 41

INSTALLATION METHODS

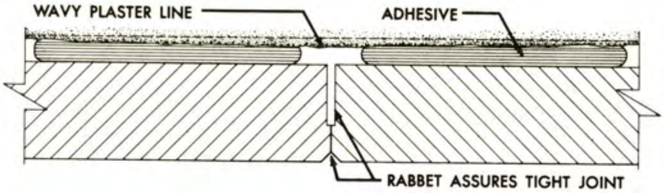
AUDITONE is installed by approved USG Acoustical Contractors using one of the following methods:

1. Adhesive application of 12″x12″ or 12″x24″ AUDITONE to an existing ceiling or to a suspended gypsum board base.
2. Stapling, nailing or screwing 12″x24″ tongue and groove units to wood strips, studs or joists.
3. Screw application of 12″x24″ tongue and groove units to USG Z-Board, SHEETROCK* FIRECODE* Wallboard or SHEETROCK Wallboard.
4. Mechanical suspension of ¾″ x 12″ x 24″ tongue and groove units.

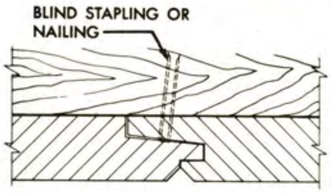
LIMITATION OF USE

Perforated, Random Perforated and Pin Perforated AUDITONE should not be used below wainscot height or where tile will be subject to severe impact, abrasion, or tampering.

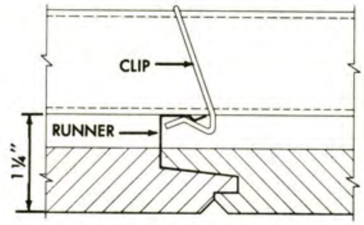
AUDITONE tile is not recommended for use where it will be exposed to steam or constant high humidity.



No. 1 MOUNTING ---------------- ADHESIVE APPLICATION OF 12″ x 12″ AUDITONE



No. 2 MOUNTING ------------- STAPLE OR NAIL APPLICATION TO WOOD STRIPS USING 12″ x 24″ T&G AUDITONE



No. 7 MOUNTING --------------- TO METAL RUNNER USING T&G AUDITONE

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*T. M. Reg. U. S. Pat. Off.

I. SCOPE

(List All Areas To Receive Acoustical Treatment.)

II. GENERAL PROVISIONS

Bases to receive acoustical units and the units themselves shall not be installed unless satisfactory closures for windows and other openings are in place and roofs are tight. Temperatures in the working areas shall be well above freezing.

Bases to receive acoustical units shall be sound, dry, and free of moisture.

The area or room in which acoustical units are to be installed shall not be damp; i.e. plastic, terrazzo floor, etc. shall be previously installed and dry.

III. MATERIALS

Acoustical Tile By The United States Gypsum Co. Shall Be:

ACOUSTONE "F"—(White or Ivory)

¾″ x 12″ x 12″ (square or bevel edge)
¾″ x 12″ x 24″ (square edge or bevel edge centerscored)
¾″ x 12″ x 24″ (bevel edge centerscored for Concealed Accessible System)
¾″ x 12″ x 36″ (square edge)
¾″ x 24″ x 24″ (square edge)

ACOUSTONE "db"

See ACOUSTONE "F" sizes.

ACOUSTONE "90" and "120"

¾″ x 12″ x 12″ (square edge)

MOTIF'D* ACOUSTONE—(White or Ivory)

¾″ x 12″ x 12″ Pattern no. (2, 5, 10, 19, 32-A, 32-B, 33, 36, 37, 39 or 40)
¾″ x 12″ x 24″ Pattern no. 38

ACOUSTONE Finesse

See ACOUSTONE "F" sizes

ACOUSTONE Glacier

¾″ x 12″ x 12″ (square edge)
¾″ x 12″ x 24″ (square edge)

RANDOM PERFORATED AUDITONE, PIN PERFORATED AUDITONE, or REGULAR PERFORATED AUDITONE

½″ x 12″ x 12″ (butt bevel)
½″ x 12″ x 24″ (tongue and groove)
¾″ x 12″ x 12″ (butt bevel)
¾″ x 12″ x 24″ (tongue and groove)

PERFATONE, Regular and Random Pattern

12″ x 12″, 24″, 36″, or 48 (butt bevel and scored) perforated metal (steel or aluminum) unit with flame proof sound absorbent paper wrapped pad and grid support.

Base for Application Shall Be:

1½″ *cold rolled carrying channel* grillage supported by no. 8 gage hanger wire.

Gypsum board—Nailing channel using

Nailing channel and splice plate.

Tie wire 17 gage galvanized

Nails, 12½ to 11 gage, with ring shank 16 to 20 rings per inch, medium or short diamond point, ¼″ to $\frac{5}{16}$″ head. Nails shall be 1¼″ long.

a. ½″ x 2′ x 8′ USG Z-Board
b. ½″ SHEETROCK* FIRECODE* Wallboard
c. ½″ or ⅝″ BAXBORD* backing board
d. ⅝″ BAXBORD FIRECODE

Butt Joint clip or Butt Joint washer

Wood Grillage

2″ x 2″ or 2″ x 3″ wood nailing strips—straight grain, kiln dried and free from knots.

1″ x 3″ wood furring strips—straight grain, kiln dried and free from knots.

Systems For Application Shall Be:

USG Concealed Z-Spline for ACOUSTONE and MOTIF'D ACOUSTONE of 12″ x 12″ and 12″ x 24″ sizes.

¾″ USG Z-Spline
Flat Spline of galvanized steel.
Spring steel spacer.
USG finish channel and finish channel corner plate.
82-A clips—to attach Z-Spline to 1½″ (C.R.) carrying channel.
85 clip—to attach Z-Spline direct to bar joist.
90 clip—to attach Z-Spline direct to wood furring.

Concealed Accessible Z-Spline System for ACOUSTONE

¾″ or 1¼″ Z-spline
T-Spline of galvanized steel
Angle Splines—23½″ and $10\frac{15}{16}$″ of galvanized steel
Finish channel and finish channel cover plate
82-A clips to attach Z-Splines to 1½″ carrying channels

E-Z-S Suspension System—For ACOUSTONE; and MOTIF'D ACOUSTONE of 12″ x 24″, 12″ x 36″, and 24″ x 24″ nominal sizes.

1¼″ Z-Spline painted white.
T-Spline of galvanized steel.
Angle spline of galvanized steel.
Spring steel spacer.
USG finish channel and finish channel corner plate.
82-A clip—to attach Z-Spline to 1½″ (C.R.) carrying channel
85 clip—to attach Z-Spline direct to bar joist
90 clip—to attach Z-Spline direct to wood furring

PERFATONE Suspension System

T-Runners and splices
Finish channel
Wire clip—for attachment to 1½″ (C.R.) carrying channel

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*T. M. Reg. U. S. Pat. Off.

Mechanical Suspension of—T&G AUDITONE*

1. T&G Runners, closed type, shall be attached on 12″ centers and at right angles to:
   - a. 1½″ (C.R.) carrying channel grillage by No. 82 Clip
   - b. Bar joist by No. 85 Clip
2. T&G Runners, open type, shall be attached on 12″ centers and at right angles to:
   - a. Wood framing by No. 90 Clip

Adhesive

Shall be of a type manufactured expressly for the purpose of applying acoustical tile and shall not be water soluble. It shall not contain ingredients that react chemically with paint, or contain a solvent that has a stronger solvent action on an oil paint than naphtha.

Flat Fiber Splines (For Aligning Square Edge ACOUSTONE* and MOTIF'D* ACOUSTONE) shall be ¾″ x 3″ x .048″.

Staples, Nails and Screws

Staples for (½″ or ¾″) tongue and groove AUDITONE shall be 9/16″ long, coated.

Nails for ½″ tongue and groove AUDITONE shall be 1⅛″ blue lath nails.

Nails for ¾″ tongue and groove AUDITONE shall be 1¼″ blue lath nails.

Screws for ½″ tongue and groove AUDITONE shall be ⅞″ no. 4 flat head.

Screws for ¾″ tongue and groove AUDITONE shall be 1″ no. 4 flat head.

IV. INSTALLATION

Base

1½″ cold rolled channel grillage—No. 8 gage hanger wires shall be securely attached at 4′-0″ on center. 1½″ carrying channels shall be tied to the hanger wires and shall be hung level at a maximum spacing of 4′-0″ on center. The 1½″ channel adjacent to an intersecting wall shall not be placed more than 12″ from the wall.

Gypsum Board—Nailing Channel—Nailing channel shall be securely wire tied to 1½″ cold rolled carrying channels with no. 18 gage galvanized tie wire.

Nailing Channel Maximum Spacing Shall Be:

- a. 24″ on center for ½″ Z-Board (and other ½″ and ⅝″ gypsum boards having either "V" edges or taped joints).
- b. 16″ on center for ½″ Baxbord
- c. 20″ on center for ½″ or ⅝″ Gypsum Boards not covered in "a" or "b" above.

Nail spacing shall be 6″ center to center. End joints are to be staggered at least one support spacing. Butt joints shall occur at the nailing channel where butt joint clips or washers shall be used 6″ on center.

Wood Grillage—Main Members (2″ x 2″ or 2″ x 3″) shall be suspended not more than 36″ on center. 1″ x 3″ furring strips shall be nailed in place not more than 12″ on center. (For nail, staple or screw method of applying, ¾″ x 12″ x 24″ T&G AUDITONE, the furring strips may be placed 16″ on center).

Metal Suspension

Concealed Z-Spline Method of Installing:

1. MOTIF'D ACOUSTONE
2. ACOUSTONE "F"

¾″ Z-Splines shall be attached on 12″ centers and at right angles to:

- a. Metal Grillage by 82-A clip
- b. Bar Joist by 85 clip
- c. Wood Framing by no. 90 clip

The tile shall be supported by inserting the Z-Spline flanges into the kerfed edges of the tile. Abutting edges shall be aligned by inserting flat steel splines into the kerfs of the transverse edges of the tile. ACOUSTONE finish channel moulding shall be provided at the wall intersections and spring steel spacers placed into the channel at 12″ centers. Finish channel corner plate shall be used at all exterior corners. At interior corners where channel is to continue, flanges shall be cut and the web bent to form corners, overlapping channel flanges.

ACOUSTONE F for Concealed Accessible System

- a. ¾″ or 1¼″ Z-splines shall be attached on 24″ centers and at right angles to the metal grillage by 82-A clips.
- b. Accessible Tile—USG 7/16″ x 7/16″ x 23½″ Angle Splines shall be inserted in the kerf on each 24 inch edge with both angles on one end extending ½″ beyond the edge to support the tile on the Z-Splines.

  The 7/16″ x 10 15/16″ Angle Splines shall be inserted in the 12″ kerf which has the protruding angles. The tile is then installed by seating the opposite end of the tile in the Z-Spline and seating the protruding angles on the adjoining Z-Spline.

E-Z-S Z-Spline Metal Suspension Installation Method:

1. MOTIF'D ACOUSTONE Design #38 "linea"
2. ACOUSTONE "F"

1¼″ painted Z-Spline shall be attached on 24″ centers and at right angles to:

- a. Metal Grillage by no. 82 clip
- b. Bar Joists by no. 85 clip
- c. Wood Furring or Framing by no. 90 clip

¾″ x 12″ x 24″ tile shall be placed on top of the lower flange of the Z-Spline; Angle Splines or T-Splines shall be inserted in the kerf of the abutting or transverse edges of the tile.

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*T. M. Reg. U. S. Pat. Off.

T&G Suspension System—For T&G AUDITONE

T&G Runners (closed or open type) and splices.

82-A Clip—to attach T&G Runner (closed type) to 1½″ carrying channel.

85 Clip—to attach T&G Runner (closed type) direct to bar joist.

90 Clip—to attach T&G Runner (open type) direct to wood furring.

PERFATONE Suspension System—PERFATONE Tee Runners shall be attached 2′-0″ on center with wire clips to 1½″ (C.R.) carrying channel grillage at right angles. PERFATONE Acoustical units with the mineral fiber pad and pad support included shall be securely snapped into the Tee Runners. Finish channel moulding shall be provided at the wall surfaces.

Adhesive

a. 12″ x 12″ Acoustical units shall be primed with adhesive prior to the application of 4 spots of adhesive placed near the corners of the tile. The adhesive shall be approximately 2½″ in diameter after the tile has been pressed into position on the ceiling.

Place ¾″ x 3″ x .048″ fiber splines in the kerfs at the corners of the acoustical units (required only for square edge ACOUSTONE and MOTIF'D ACOUSTONE).

b. 12″ x 24″ T&G AUDITONE shall be primed with adhesive prior to the application of the 6 spots of adhesive. Place 4 spots of adhesive near the corners of the 12″ x 24″ units and 2 spots near the edges of the tile at the centerline of the 24″ dimension. The adhesive shall be approximately 2½″ in diameter after the tile has been pressed into position on the ceiling. The units shall be placed so that the face surface of the acoustical ceiling is aligned and level.

Staples, Nails, & Screws

12″ x 24″ T&G AUDITONE shall be installed by attaching the leading tongue edge at the ends and center with the specified staples (nails or screws):

a. To the wood furring or wood framing

b. To the Gypsum board base (screw application only)

"ACOUSTONE," "AUDITONE," "MOTIF'D," "USG," "ROCKLATH," "SHEETROCK," "FIRECODE," "BAXBORD," "PERFATONE" mentioned in this publication are registered trademarks owned by United States Gypsum and used by it to distinguish its products. "ACOUSTONE" as used herein identifies the particular mineral acoustical tile; "AUDITONE" as used herein identifies the particular wood fiber acoustical tile; "MOTIF'D" as used herein identifies the particular mineral acoustical tile with decorated surface; "USG" as used herein identifies the particular sheathing and sound insulation; "SHEETROCK" and "FIRECODE" as used herein identify the particular gypsum wallboard; "BAXBORD" as used herein identifies the particular backing board; "ROCKLATH" as used herein identifies the particular gypsum lath or plaster base; "PERFATONE" as used herein identifies the particular perforated metal acoustical tile; all manufactured only by United States Gypsum.

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A.I.A. File 30-F-1 30-F-2

TECHNICAL INFORMATION

AIRSON†

AIR DISTRIBUTION SYSTEMS

THROUGH PRESSURIZED ACOUSTICAL CEILINGS

UNITED STATES GYPSUM

1963

†T.M. Reg. U.S. Pat. Off. by Airson Co., Inc.

UNITED STATES GYPSUM

A.I.A. File 30-F-. 30-F-2

A NOTE TO THE ARCHITECT AND MECHANICAL ENGINEER

Your primary concern in selecting the best air distribution system for your project is whether the distribution system will maintain comfort for the occupants. Comfort, in air conditioning, results from control of three elements: temperature, humidity and air motion. Together, these are called "thermo-equivalent conditions" and this is the determinant of any comfort level. Any variation from accepted standards of one of these elements may result in discomfort to the occupants.

Temperature and humidity control is easily recognized as necessary. In modern central heating and air conditioning systems, temperature and humidity are controlled by the primary equipment. In the AIRSON system, the fan units supply motion to the air to move it into the plenum chamber above the suspended acoustical ceiling. The pressurized plenum supplies the necessary conditioned air through the ceiling into a room at a prescribed velocity to provide acceptable air motion, eliminate air stagnation, and provide a controllable comfort level. An air distribution system must satisfy the engineering requirements as stated above, and conversely must not distract from the aesthetic features provided by the Architect.

Unfortunately, this technical piece cannot provide all the necessary information to complete the design for an air distribution system. However, this information can be easily obtained from the AIRSON Technical Manual. This manual has all the information required to accurately design a system and clearly illustrates and defines installation and erection requirements for proper system performance.

WHAT YOU SHOULD EXPECT IN AN AIRSON AIR DISTRIBUTION SYSTEM

Comfort—Uniform air distribution of conditioned air throughout the room, wall to wall and floor to ceiling, is provided through controlled air velocity and air penetration over the entire conditioned space. With controlled air motion within the room, environmental comfort can be accomplished. Drafts or stagnant areas are not likely to exist because the correct volume of air is delivered at a prescribed air velocity to the breathing level.

Control & Balancing—Since everyone in the field recognizes that a perfect system is improbable because of primary equipment tolerances and workmanship, any good system of air distribution must be designed to permit greater control at the point of distribution to compensate for what cannot practically be built into a basic system itself. Conventional system balancing, normally, is very difficult to obtain and maintain because of the many unpredictable variations in outside and inside circumstances affecting primary equipment and changing room conditions. However, with the AIRSON system having multiple controls in every active tile or grid, the opportunity is available for complete control of air motion throughout the entire room or area. A simple slide adjustment, which can be made from below without removing the tile, sets the air velocity and balances the air motion in the occupied space. Ordinary non-adjustable ceiling distribution systems would require a removal and/or rearrangement of tile, a change in plenum air flow or other major changes to accommodate unusual situations.

Appearance—The timeless beauty of ACOUSTONE* mineral acoustical tile with its natural fissures masking the AIRSON orifices provides a pleasant aesthetic appointment to any architectural project. Concurrently, the downward action of air uniformly over the ceiling area directs soiled room air away from the ceiling surface, prolonging the need for any decorative maintenance. Many AIRSON ceilings in place for several years have never been painted or cleaned and still look like new. Most important is the fact that the elimination of grilles and diffusers from the ceiling area gives complete lighting flexibility and architectural design freedom.

Sound Absorption and Attenuation—The AIRSON Systems employ either ACOUSTONE Mineral Fiber Acoustical Tile, or an approved ceiling (board) panel. Both are generally excellent sound absorbers. "Up-and-Over" sound attenuation is also good with an AIRSON ACOUSTONE ceiling containing the open jets. Transmission loss is comparable to average office partition loss and, except in cases where absolute privacy is desired, this system is adequate without a sound transmission barrier above the ceiling. (See technical information for acoustical data on ACOUSTONE Mineral Acoustical Tile.)

Versatility—The uninterrupted ceiling surfaces with ceiling-wide air distribution are ideal for quick economical allocation of partitions or room space alterations. Also, deviation from normal environmental comfort standards can be easily accommodated by the inherent controls provided within the AIRSON System.

Economy—The AIRSON System, with all its plus features, is comparable in cost to conventional air distribution and ceiling constructions. Frequently substantial savings can be made over conventional systems, particularly when extensive duct work can be eliminated.

Maintenance—Very little maintenance is required with an AIRSON ceiling. The uniform distribution of air keeps dirt and other airborne matter away from the ceiling extending the painting or cleaning cycle beyond that which is normally required. When the situation arises and decorative maintenance must be done, the washability and paintability of AIRSON ACOUSTONE is excellent. Factory-painted AIRSON ACOUSTONE tile may be washed with a damp sponge or cleaned with a vacuum cleaner, chemical rubber sponge, used dry, or putty or paste type wallpaper cleaner. Accidental spotting or soiling can usually be removed by these methods before overall redecoration is necessary. AIRSON ACOUSTONE may be brush or spray painted many times without appreciable loss of sound absorption at 500 cycles per second or in the Noise Reduction Coefficient. The effect of repeated coats of paint on ACOUSTONE and other materials may be found in Research Paper RP-1298, "Effect of Paint on Sound Absorption of Acoustical Materials," which is obtainable from the National Bureau of Standards, U.S. Department of Commerce, Washington, D.C. Another important fact, painting does not affect the original performance of AIRSON air delivery when done in accordance with paint manufacturers recommendations. The orifices are designed large enough so they will not support any capillary action of the paint in closing off the orifices and, in turn, restricting air flow. Oil, casein, resin emulsion or spirit thinned paints may be used with recommended painting procedures.

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*T.M. Reg. U.S. Pat. Off.
†T.M. Reg. U.S. Pat. Off. by Airson Co., Inc.

AIRSON LICENSEE

To assure quality system installations, the workmanship of the contractor installing the system is as important as the individual parts used in the system. Therefore, all Airson Contractors are carefully selected and *licensed* by U.S. Gypsum Company. The Airson Contractor organization is a highly responsible group of businessmen offering years of experience in the erection of suspended acoustical ceilings and in the application of this air distribution system to a long list of varied jobs. The contractor has a qualified mechanical engineer who can support you in making design, installation and service decisions and also provide a preliminary cost survey without any obligation.

Engineering Information—The Airson Systems can be adapted to almost any heating or cooling air supply requirement. Complete engineering data backed by extensive laboratory tests and over twelve years of actual job experience are at your disposal.

The AIRSON System is Job Proven—There are hundreds of Airson Ceilings throughout the country providing the ultimate in environmental comfort—many of them have been in operation over twelve years. Job listings in your area are available upon request.

The U.S. Gypsum Architect Service Representative, U.S. Gypsum Sales Engineer and Airson Licensees, can supply any information you need to specify and use Airson in your area.

LIMITATIONS OF USE

Airson Acoustone mineral acoustical tiles are designed for normal moisture conditions. They should not be used where they will be exposed to excessively high humidity. They should not be used below wainscot height or where they may be damaged by impact, abrasion or tampering. Airson Acoustone should not be installed until moisture resulting from plastering, concrete or terrazzo work, etc., is no longer a hazard. Ceiling board panels pervious to air flow are not recommended.

Airson Airflo-T System may not be suitable for use in salt water coastal areas—see recommended Airson lok System —page 7.

AIRSON APPLICATIONS

Office Buildings—Office building applications offer the most formidable challenge to the Airson System because of various engineering control and comfort problems encountered in one area. For example, in the case of the large glass exposure near seated occupants, the Airson System must provide an adequate air curtain adjacent to the glass to compensate for the amount of heat transmitted through the glass and still supply the air at a reasonable velocity to avoid drafts. With the versatility in the four Airson Systems and controllable active Acoustone tile, the designer can pinpoint this air flow along the glass area, and simultaneously can control the air flow in other areas of the room so that the effect of the transfered heat is nullified and a high comfort level is maintained through the entire room. The same is true with "hot spots" in a room. A machine that creates heat, for instance, is a hot spot. With Airson, cool air can be supplied directly toward the machine in large quantities to compensate for its heat production. Correspondingly, balancing can be done in other areas of the same room so that a high comfort level is maintained throughout, even for the operator of the machine.

Schools—In a typical classroom there is need for different levels of penetration. Students sitting at their desks all day require a deeper penetration of airflow than when standing at the blackboard. Therefore, the blackboard area must be treated separately, having less air penetration.

Meeting Rooms—The supplying of an adequate volume of conditioned air throughout the area is the most important engineering consideration. Therefore deeper penetration of the air is needed because the occupants are all seated. Correspondingly, it is important that we maintain a constant volume of air supply with controlled temperature. A reheat coil in the supply duct controlled by a thermostat in the room will maintain a correct temperature level without varying the C.F.M. supplied to the room.

All of these situations are common in modern architecture. Often similar problems are found within the same area. Airson, because it offers control of room air motion, can handle each and every situation so that the entire area is maintained at a high comfort level.

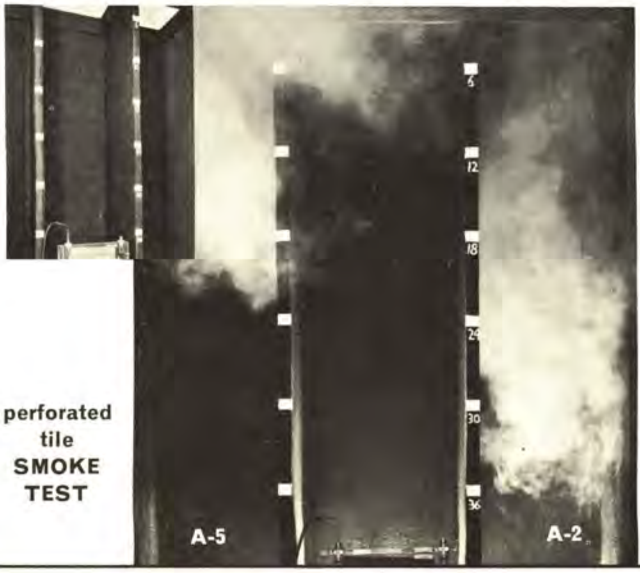
HERE'S PROOF OF REAL PENETRATION

In the test chamber shown, the A-2 and A-5 tile of the Airson-Acoustone system were smoke-tested with a perforated ventilating tile. A common plenum with the same static pressure above the three tiles was used.

The perforated tile has hundreds of tiny holes which "leak" conditioned air into a room. The holes make up about two percent of the total tile surface. They remain "open" at all times and have no means of control.

When smoke was introduced, the superior penetration of the Airson system became evident. The left tile is A-5, the right tile is A-2. The multiholed tile is in the center.

It is obvious in this test that there is little, if any, penetration from tile delivering air through a multitude of tiny holes.



perforated tile SMOKE TEST

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*T.M. Reg. U.S. Pat. Off.

AIRSON† ACOUSTONE*
MINERAL ACOUSTICAL TILE

AIR DISTRIBUTION SYSTEM

**AIRSON A-2
ACOUSTONE
MINERAL TILE**

**AIRSON A-5
ACOUSTONE
MINERAL TILE**

DESCRIPTION

The Airson principle of supplying conditioned air uniformly to a space is basically coupling both plenum engineering and the jet theory. The suspended acoustical ceiling and the floor or roof construction above form a plenum, called the Airson Space. This Airson Space is air tight and pressurized with conditioned air assuring proper jet performance through controlled openings which, in turn, provide proper system performance. The result is a draft-free air distribution throughout the space.

AIRSON ACOUSTONE Mineral Tile Systems

The Airson Acoustone Tile is installed on the U.S.G. Concealed Z-Spline System of mechanical suspension. Depending upon the design requirements, either all of the tile in the ceiling areas are slotted to provide Airson jets, or, on jobs requiring fewer jets, a percentage of tile is installed without slots (as specified from charts in the Airson Technical Manual). Tile units can be easily removed or replaced by the Airson R&L Split Angles and L-Splines when accessibility is required.

The Acoustone Mineral Acoustical Tile used is specially designed for use in the Airson System. The bright, non-breathing, foil back surface of the unit adds to the efficiency of the system by preventing the seepage of air through the field of the tile and by providing reflective insulation in the Airson Space. In addition, Acoustone used in the Airson System carries with it all the advantages of high sound absorption, sound attenuation and light reflection.

The Airson Acoustone tiles offer a choice of two jet arrangements: the A-2 and the A-5 systems. The Airson Acoustone A-2 has two orifices per tile. A factory-installed adjustable damper is inserted into the back of the tile controlling both orifices which can be either opened or closed. When fully open, the two orifices provide 0.25% of the tile area.

The Airson Acoustone A-5 tile has five orifices placed parallel with the fissures of the tile. The center orifice is slightly smaller and undampered. The remaining four jets are larger and can be equipped with dampers. The five Airson orifices fully opened represent a total of 0.05% of the tile area. Both the A-2 and A-5 tile can be used with average air quantities and ceiling height applications. The special A-2 orifice arrangement gives a 35% deeper penetration than A-5 at the same flow conditions, making it more applicable to high ceiling-low flow applications.

AIRSON Grid Systems

The Airson Airflo T-2 Grid is a steel, fabricated, hollow tee section with six orifices per lineal foot in the face of the tee. A factory-installed damper is optional. This system may be designed with a selection of various acoustical panels. The static pressures and air flow rates for each combination of panel and Airflo-Tee are illustrated and engineered on separate charts in the Airson Technical Manual.

The Airson Lok is an aluminum grid system designed with two adjacent orifices. The pair of orifices are spaced 4″ on centers with a factory-installed damper available as an optional feature. Similarly, this system is rated with various panels. Generally, Airson Lok system is applicable to average or higher than normal ceiling heights.

The Airson Lok aluminum suspension system is recommended for use in salt water coastal areas or where other-than-normal moisture conditions prevail. As shown in the details on the opposite page, the system is similar in appearance and function to the steel Airflo-T Runner system.

Supply Air—Normally, terminal duct work is reduced and supply diffusers are eliminated with the Airson Systems. Conditioned air is supplied to the Airson Space through ducts directing the air horizontally into the Airson Space. In this manner, the plenum is kept under a controlled constant air pressure if designed in accordance with Airson Engineering Data. Since there is an equalization of pressure in the plenum, the air flow through the jet openings is equal throughout the ceiling.

Return Air—Air may be returned in the conventional manner through grilles to ducts in the wall or ceiling. Air can also be returned through the grid orifices, by zoning the AIRSON Space for return air with Airsonite barriers. Additional openings may be required in the latter method and may be provided by the use of special Airson spot vents.

Zoning and Balancing—The Airson Space can be easily and economically zoned to provide conditioned air to meet various design requirements of the occupied space. Airsonite, a strong, flexible, aluminum clad synthetic fabric, was specially designed for use as a zone air barrier material for the Airson Systems.

Additional air distribution control within a zone can be done easily by adjusting the slides in the Acoustone Mineral Acoustical Tile or by adjusting the slides of the Airson Airflo-T and Airflo-Lok in the exposed runner systems. Adjustments are made from below the ceiling without removing any of the ceiling units.

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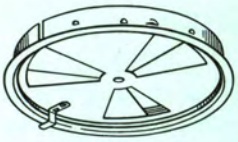
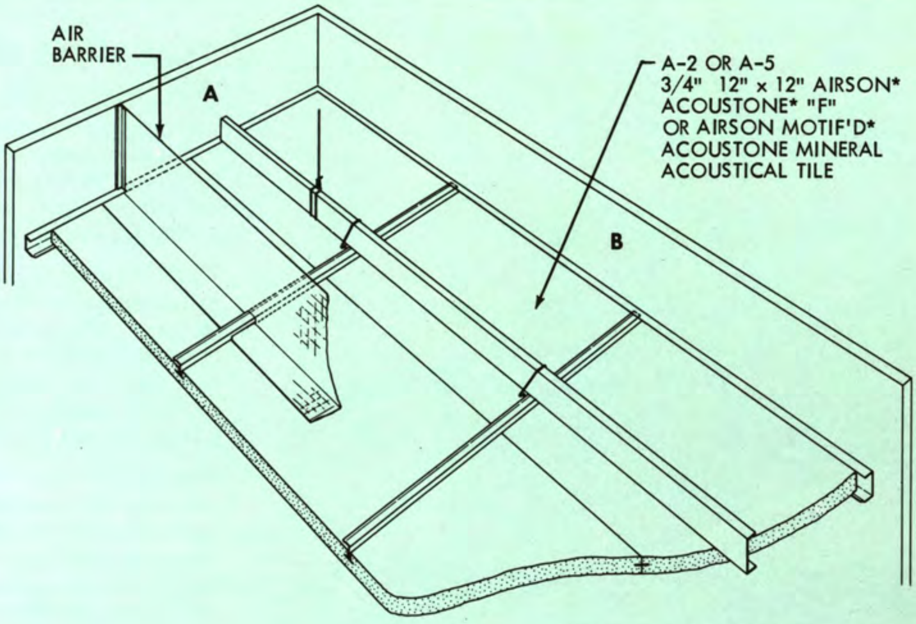
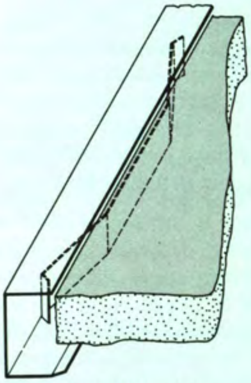
*T. M. Reg. U. S. Pat. Off.
†T.M. Reg. U.S. Pat. Off. by Airson Co., Inc.

INSTALLATION DETAILS A-2 and A-5

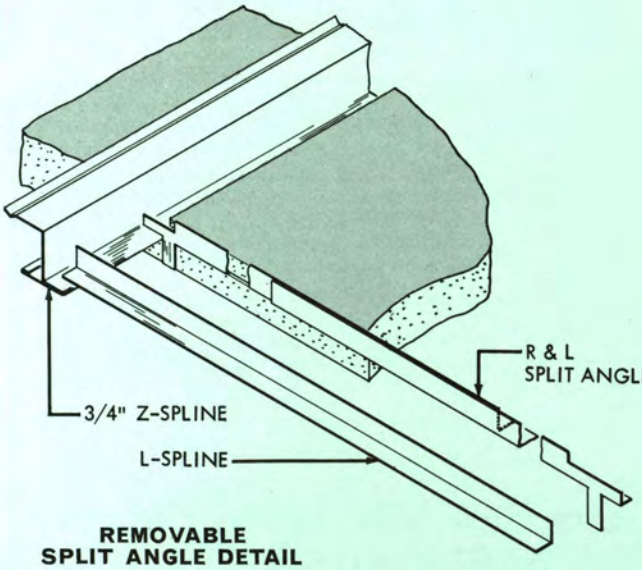


SPOT VENT

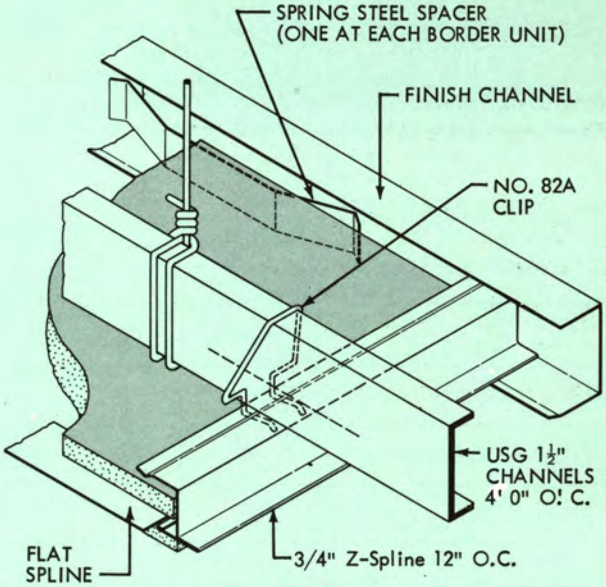




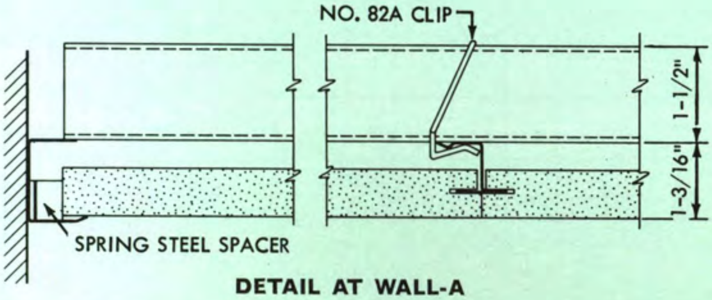
DETAIL AT WALL-A



REMOVABLE SPLIT ANGLE DETAIL



DETAIL AT WALL-B



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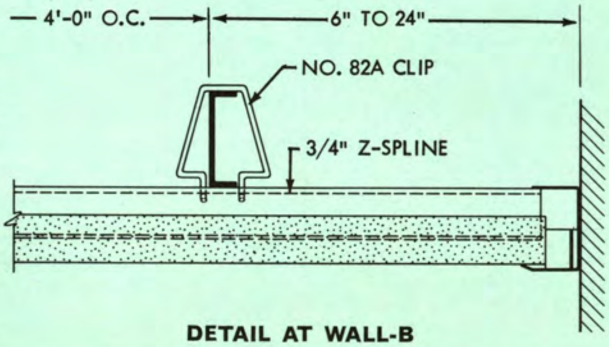

DETAIL AT WALL-B

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AIRSON†
AIRFLO-T GRID
AIR DISTRIBUTION SYSTEM

Typical installation of Exposed **AIRSON** Airflo-T with ceiling board

TECHNICAL INFORMATION

The Airson Systems are based on a predictable penetration concept of air distribution. However, to achieve proper air distribution, recommended air velocities at the breathing level must be adhered to and adequate static pressure in the plenum must be specified to assure proper air delivery to the conditioned zone.

U. S. Gypsum Company has collated extensive application and installation information and obtained important performance data to assure the designer of Airson quality. The charts and tables in the Airson Technical Manual provide the necessary data required to establish system static pressure, penetration and percentage of open tile or lineal feet of open grid or runners in relation to the supplied air flow.

There are situations where large quantities of conditioned air are required. These situations are generally not common but they do exist. For these problem areas, the Airson System offers specially engineered devices, called spot vents placed in the center of the acoustical tile. Airson offers these in a variety of damper opening sizes to cover every problem area and cfm requirement. These spot vents are ordinarily specified by the Airson contractor working through the consulting engineer and are designed into the Airson System for overall maximum performance.

SOUND ABSORPTION

ACOUSTONE* PRODUCT	Mounting	Weight PSF	NRC Spec. Range	SOUND ABSORPTION COEFFICIENTS AT CPS					
				125	250	500	1000	2000	4000
AIRSON ACOUSTONE Unslotted	7	1.29	.70—.80	.58	.48	.67	.99	.92	.85
AIRSON ACOUSTONE A-5	7	1.33	.70—.80	.81	.48	.65	.94	.93	.84
AIRSON ACOUSTONE A-2	7	1.35	.70—.80	.85	.49	.68	.98	.92	.88

SOUND ATTENUATION

ACOUSTONE PRODUCT	Suspension System	Size	Sound Trans. Class*	Eleven Frequency Average	ATTENUATION (Decibels) AT CPS										
					125	177	250	354	500	707	1000	1414	2000	2828	4000
AIRSON ACOUSTONE A-5 50/50 Pattern—Plenum Pressure	Concealed Z-Spline	12″ x 12″	36	39.8	23	31	27	30	33	37	40	49	54	58	56
AIRSON ACOUSTONE A-5 50/50—No Plenum Pressure	Concealed Z-Spline	12″ x 12″	36	39.7	23	30	28	30	33	37	41	49	53	58	55
AIRSON ACOUSTONE A-2 50/50—No Plenum Pressure	Concealed Z-Spline	12″ x 12″	36	39.8	25	31	30	30	34	36	40	46	51	59	58
AIRSON ACOUSTONE A-5 50/50—	Concealed Accessible	12″ x 12″	31	35.0	21	27	24	25	29	31	34	41	45	54	54

*RATED in accordance with ASTM E90-61T
SOURCE: Official AMA acoustical testing laboratories

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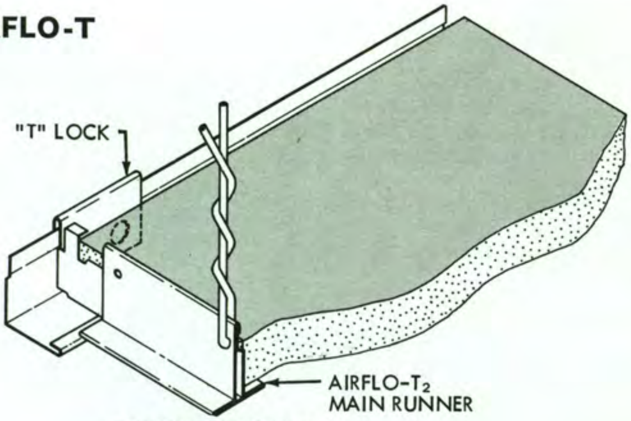
*T. M. Reg. U. S. Pat. Off.

INSTALLATION DETAILS

AIRFLO-T AND AIRFLO-LOK GRID SUSPENSION SYSTEMS

AIRFLO-T



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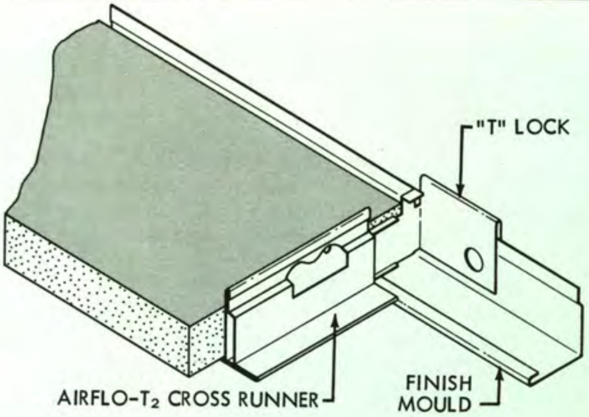
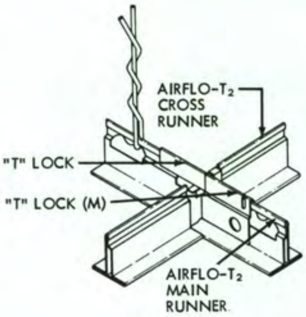
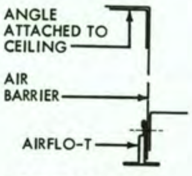


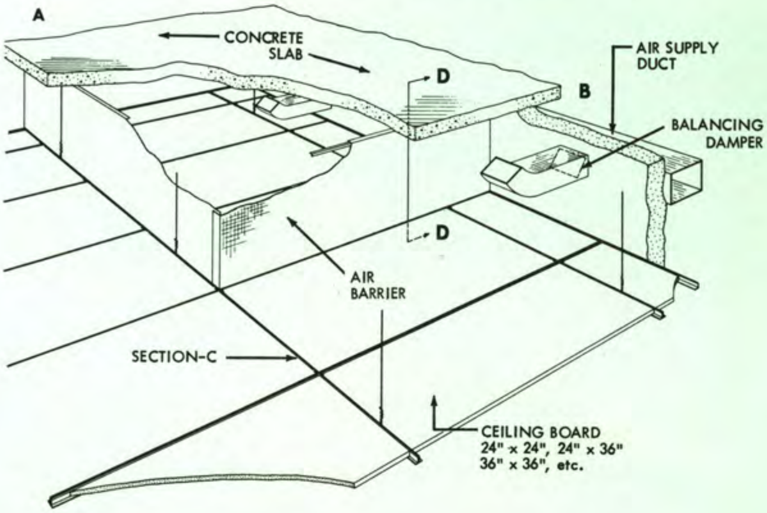
DETAIL AT WALL-B



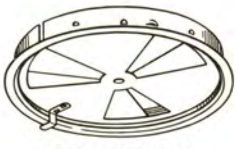
SECTION-C



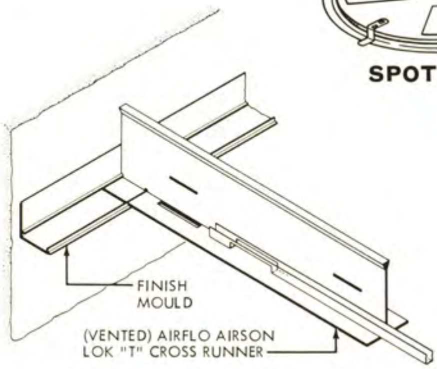
SECTION-DD



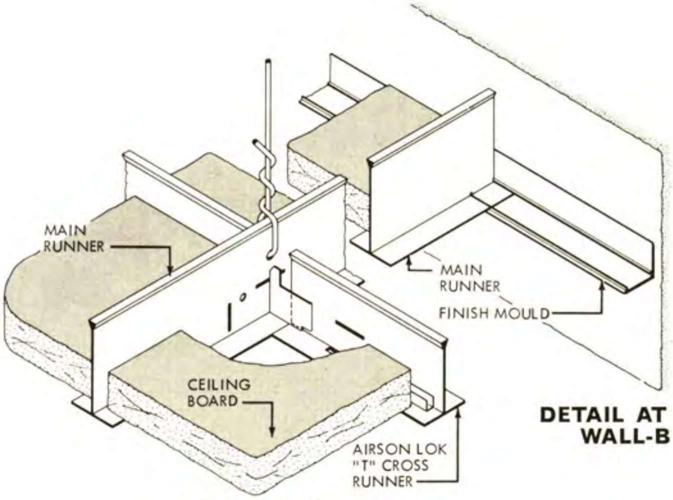
AIRFLO-LOK



SPOT VENT



DETAIL AT WALL-A



DETAIL AT WALL-B

FOUR WAY INTERSECTION

*T. M. Reg. U. S. Pat. Off.

AIRSON† SPECIFICATIONS

I. SCOPE

Work Included—This Contractor shall furnish and install AIRSON System of air distribution for heating (and cooling) where shown on the Drawings. All material shall be furnished and installed by an applicator licensed by the United States Gypsum Company. All overhead architectural, mechanical, and electrical work shall be completed, all opening closures shall be installed, and room areas shall be free from excessive moisture prior to the installation of the System.

II. GENERAL PROVISIONS

Work by Others—The heating (and cooling) plant(s), including all supply and return air ductwork to and from the area(s) incorporating the AIRSON System, all included wall and ceiling return air grilles, and any auxiliary heating and cooling units should be installed by others in accordance with the recommendations of the United States Gypsum Company and Airson Co., Inc. All electrical fixtures or other equipment to be incorporated in the ceiling suspension systems shall be furnished and installed by others in accordance with the manufacturer's recommendations.

System Performance—The air distribution ceiling system shall contain an incombustible dampering method for balancing air flow into the conditioned space and shall be adjustable from the room side of the ceiling, without removal of the acoustical tile or board. Each slotted tile shall have not more than ½ of 1% open area to produce an air velocity of not less than 25 feet per minute (FPM) and no more than 000 FPM at 000 inches above the floor. (Data obtainable from AIRSON Penetration Charts.) The noise reduction coefficient range of the tile shall be no less than 000. (See A.I.A. File 30-F-1 1962 for specific values.) The ceiling attenuation must average no less than 0000 DB. (See published values for AIRSON-ACOUSTONE.)

III. MATERIALS FOR AIRSON ACOUSTONE* SYSTEM

Acoustical Tile By The United States Gypsum Company:

AIRSON ACOUSTONE Mineral Acoustical Tile—Foil Backed.

¾″ x 12″ x 12″ with jets (and plain).
¾″ x 12″ x 24″ with jets (and plain).

Base For Application:

1½″ cold rolled carrying channel grillage supported by No. 8 gage hanger wire.

MATERIALS FOR AIRFLO-T GRID SYSTEM

Acoustical Ceiling Panel (as selected)

Airflo-T Grillage.

Main Runners of .020 steel having a baked enamel finish.

Cross Runners, Open (and closed) Type (as required by the mechanical engineer from the AIRSON charts).

Mouldings—shall be AIRSON ceiling mould with provisions for locking cross-runners which shall be included at every junction.

Spot Vents for added air supply.

IV. INSTALLATION

Installation of the Airflo-T runners and Cross-T runners shall be in accordance with the manufacturers' recommendations and with the details shown in their literature.

Accessories:

¾″ USG Z-Spline.

Flat Spline of galvanized steel.

Spring steel spacers.

Finish channel and finish channel corner plates.

82-A Clips—to attach Z-Spline to 1½″ cold rolled carrying channels.

R & L Split Angles & L-Splines with tabs for access.

Spot Vents for added air supply.

Base—1½″ channel grillage—No. 8 gage hanger wires shall be securely attached at 4′0″ on center. 1½″ carrying channels shall be tied to the hanger wires and shall be hung level at a maximum spacing of 4′0″ on center. The 1½″ channel adjacent to an intersecting wall shall not be placed more than 12″ from the wall.

AIRSON Slides—shall be attached to the back side of all tile with jets and shall control air passage through the slots. These slides shall be controlled from the room side of the tile by means of a sharp pointed instrument.

AIRSON ACOUSTONE—¾″ USG Z-Splines are attached on 12″ centers and at right angles to:

Metal Grillage by 82-A clips.

The tile shall be supported by inserting the Z-Spline flanges into the kerfed edges of the tile. Abutting edges shall be aligned by inserting flat steel spline (or R & L Split Angle & L-Spline for access) into the kerfs of the transverse edges of the tile. ACOUSTONE finish channel moulding should be provided at the wall intersections and spring steel spacers placed into the channel at 12″ centers. Finish channel corner plate shall be used at all exterior corners. At interior corners where channel is to continue, flanges shall be cut and the web bent to form corners, overlapping channel flanges.

AIRSON Space—shall be provided above the suspended ceiling. The Contractor shall check all Drawings and job conditions and ascertain code or other requirements for covering and sealing the top and sides of the Airson Space and furnish and install the same. He shall make certain under any circumstances that the space is sealed tight against air leakage. *He shall insulate, if necessary any walls of the space exposed to outside temperatures with a minimum of 1″ thick ½ lb. density glass fibre insulation*, by cementing on the same with Minnesota Mining & Mfg. Co. EC-104 cement, or equal. All joints shall fit tightly.

AIRSON Zone Barriers—shall be furnished and installed where shown on the Drawings. Zone Barriers should be constructed of AIRSONITE, which is a permanent, flexible, and incombustible material. Top edge shall be turned at least 2″, coated with adhesive, and held permanently in place with a sheet metal angle nailed securely. (Note: In concrete, use stub concrete nails held with a magnetic holder while nailing.) All edges shall be lapped at least 2″ and cemented together. Bottom edges must be lapped at least 3″ on the back of the ACOUSTONE Mineral Acoustical Tile and cemented directly to the tile.

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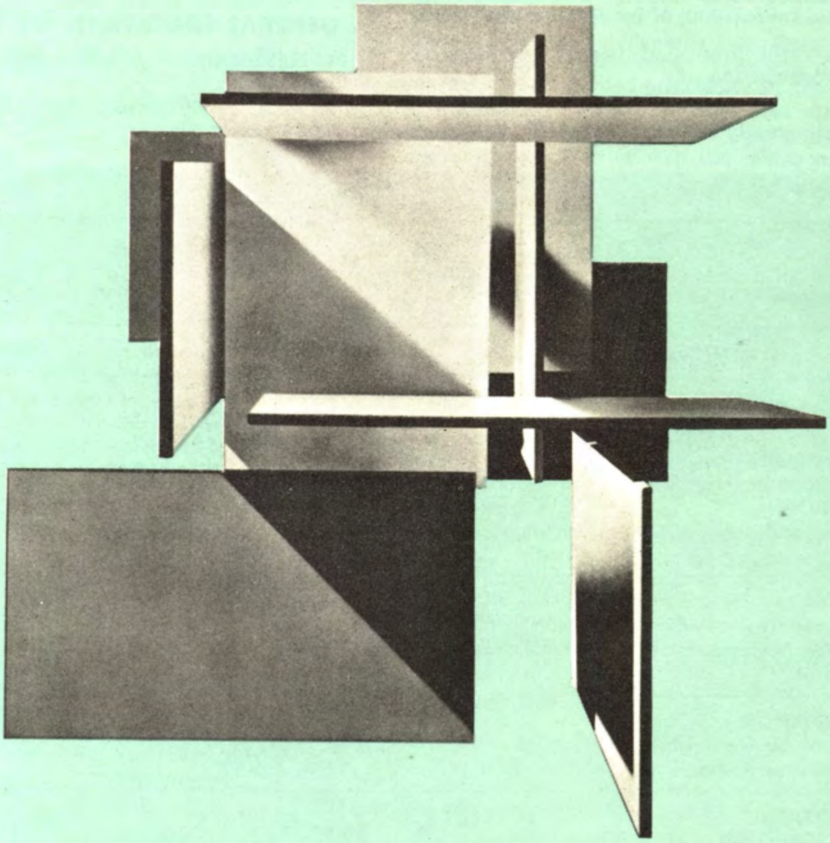
*T. M. Reg. U. S. Pat. Off.
†T.M. Reg. U.S. Pat. Off. by Airson Co., Inc.

A.I.A. File 23-L
23-M

TECHNICAL INFORMATION

SHEETROCK* GYPSUM WALLBOARD AND GYPSUM DRYWALL SYSTEMS



UNITED STATES GYPSUM

UNITED STATES GYPSUM

A.I.A. File 23-L
23-M

1963

*T.M. Reg. U.S. Pat. Off.

SHEETROCK*
GYPSUM WALLBOARD | GENERAL DATA

DESCRIPTION

SHEETROCK is a mill fabricated gypsum wallboard composed essentially of a fireproof gypsum core encased in a heavy manila-finished paper on the face side and a strong liner paper on the back side. The face paper is folded around the long edges to reinforce and protect the core, and the ends are square-cut and finished smooth.

FUNCTION AND UTILITY

SHEETROCK Wallboard furnishes to interior walls and ceilings a durable surface suitable for any type of decorative treatment, and permits repeated decoration during the life of the building. The joints between adjacent boards may be reinforced and concealed with the PERF-A-TAPE* Joint System, or may be featured by leaving exposed or covering with a decorative moulding.

Dry Wall Construction—Mill fabricated boards eliminate excessive moisture in construction.

Fireproof—The gypsum core will not support combustion or transmit temperatures greatly in excess of 212°F. until completely calcined—a slow process. See technical data for Fire Resistance Ratings.

Crack Resistance—"Welded" together by the PERF-A-TAPE* Joint System, SHEETROCK Wallboard forms walls and ceilings exceptionally resistant to cracks caused by frame movement, vibration or minor settlement.

Speed—Mill fabricated boards are easily cut and quickly applied.

Quick Decoration—Essentially a "dry" material, SHEETROCK Wallboard permits painting or other decoration, and the installation of metal or wood trim, almost immediately.

Non-Warping—Expansion or contraction under normal atmospheric changes is negligible and does not cause harmful warping or buckling.

GENERAL LIMITATIONS OF USE

1. Not recommended where exposure to moisture is extreme or continuous.
2. Must be adequately protected against wetting when used as a base for tile.

*T.M. Reg. U.S. Pat. Off.

SELECTOR INDEX

GENERAL DATA .... pages 2-9
Description .... 2, 3 & 4
Fire Resistance Ratings 5
Technical Data/Fastener Specifications 7-8
Types of SHEETROCK Wallboard 3-4

SYSTEM/PAGE	Description	Installation	Specifications	Arch. Details
SHEETROCK Gypsum Wallboard Systems For walls, ceilings or partitions and other special applications over primarily wood framing.	10, 11, 12, 13 & 14	10, 11, 12, 13 & 14	10, 11, 12, 13 & 14	10, 11, 12, 13 & 14
SEMI-SOLID PARTITION For permanent space division within residential occupancies.	18	20	19	21
2" SOLID PARTITION For permanent space division within occupancies in all classes of construction—commercial, institutional, residential, and industrial.	22	22	23	24 & 25
DOUBLE SOLID PARTITION For permanent space division between occupancies and corridor walls, or as a service core wall.	26	27	27	28 & 29
METAL STUD PARTITION For general space separation in all classes of construction.	30 & 31	33	31 & 32	34 & 35
CEILING AND WALL FURRING SYSTEMS For ceiling and wall areas in all classes of construction where a versatile base for any number of decorative treatment is required. (DWS) (DWC) (RC-1)	38 & 39	38	39, 40 & 41	42 & 43
STRUCTICORE	45	45	46 & 47	47 & 48
CHASE WALL	36	36	—	36
COMPOSITE WALL	37	37	—	37

ACCESSORIES .... 7, 14, 15, 16 & 17
Accessories normally required for all types of gypsum drywall construction

REPRESENTATIVES 48

"USG", "SHEETROCK", "PERF-A-TAPE", "BAXBORD", "FIRECODE", "PERF-A-BEAD", "DUR-A-BEAD", "PERF-A-TRIM", "TEXOLITE", "BRIDJOINT", "TRUSSTEEL", "TRUS-LOK", "PYROBAR", are trademarks owned and/or registered by United States Gypsum. "USG" identifies the particular gypsum board sheathing or laminating adhesive, "SHEETROCK" identifies the particular gypsum wallboard or adhesive, "BAXBORD" and "FIRECODE" identify the particular gypsum wallboards, "PERF-A-TAPE" identifies the particular joint sealing tape, "PERF-A-BEAD" and "DUR-A-BEAD" identify the particular corner bead, "PERF-A-TRIM" identifies the particular casing, "BRIDJOINT" and "TRUS-LOK" identify the particular clips, "TRUSSTEEL" identifies the particular stud, "PYROBAR" identifies the particular gypsum tile, "TEXOLITE" identifies the particular interior paint manufactured only by United States Gypsum.

3. Maximum Spacing of Framing Members: ½" and ⅝" SHEETROCK Wallboard is designed for use on framing centers from 16" to 24"; ⅜" and ¼" SHEETROCK, on centers up to 16". SHEETROCK Wallboard used on 24" centers on ceilings must be applied across framing members. When so applied, the use of headers behind joints is not required. On walls, where SHEETROCK is applied across framing on 24" centers and joints reinforced, headers are not required.

4. Application of SHEETROCK over ¾" wood furring applied across framing is not recommended since the relative flexibility of the furring under impact of the hammer tends to loosen nails already driven.

5. The application of SHEETROCK over an insulating blanket, that has first been installed continuously across the face of the framing members, is not recommended.

STANDARD SPECIFICATIONS

SHEETROCK Wallboard complies with the following Standard Specifications for Gypsum Wallboard: Federal Specification SS-W-51a and SS-W-0051b; American Society for Testing Materials—Designation ASTM C36.

TECHNICAL ASSISTANCE

United States Gypsum maintains an Architect Service Department and a number of special wallboard sales representatives, both of which are well trained to consult with architects and contractors on wallboard products and systems and their application to special job problems and conditions.

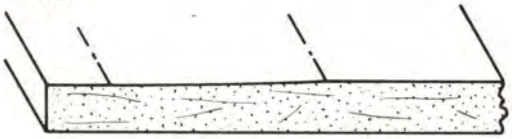
Inquiries may be directed to:
United States Gypsum Co., Department 130
300 West Adams St., Chicago 6, Illinois

AVAILABILITY

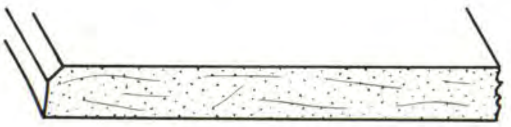
Twenty-four operating plants located strategically throughout the United States produce and/or stock the gypsum board materials described herein. Seven warehouse facilities, in addition to these plants, increase the total distribution and service efficiency to both major markets and rural areas from coast to coast. All standard or specialty gypsum board products may be considered readily available and easily procured upon short notice.

TYPES OF EDGES

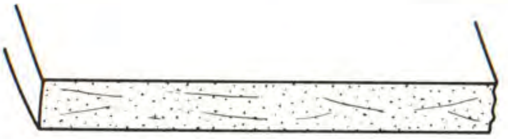
TAPERED



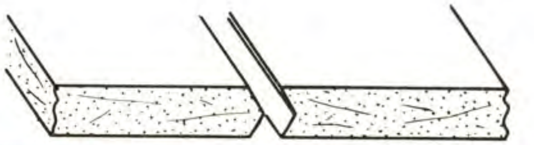
BEVELED



SQUARE



T & G



TYPES OF
SHEETROCK* GYPSUM WALLBOARD

TAPERED EDGE SHEETROCK

The long edges are tapered on the face side and upon application of the SHEETROCK, form a shallow channel for the joint reinforcement which provides smooth, continuous wall and ceiling surfaces. Made in four thicknesses:

Five-Eighths Inch. ⅝" Tapered Edge SHEETROCK is recommended for the finest single layer drywall construction. The greater thickness provides increased resistance to fire exposure and transmission of sound.

One-Half Inch. ½" Tapered Edge SHEETROCK is recommended for single layer application in new residential construction.

Three-Eighths Inch. ⅜" Tapered Edge SHEETROCK differs from ½" Tapered Edge SHEETROCK Wallboard only in thickness and weight and is applied principally in the Double Wall System and in repair and remodel work.

Quarter-Inch. A lightweight, low cost, utility gypsum wallboard, easily applied over old wall and ceiling surfaces.

Thickness: ¼", ⅜", ½", ⅝"
Width: 4'
Length: 8', 9', 10', 12' or 14' (Note: ¼" 8', 10' only)
Edges: Tapered
Finish: Ivory manila paper, suitable for paint, wallpaper or other decoration.

SHEETROCK FIRECODE

⅝" SHEETROCK FIRECODE and ½" SHEETROCK FIRECODE are gypsum wallboards which combine all the advantages of Regular SHEETROCK with additional resistance to fire exposure—the result of a specially formulated core containing special mineral materials.

In accordance with Underwriters' Laboratories tests, certain partition and floor and ceiling constructions with ⅝" SHEETROCK FIRECODE and ½" SHEETROCK FIRECODE facings afford 60 minute and 45 minute fire resistance ratings, respectively. These products are also used in 1½-hour floor and ceiling, 2-hour wall and 2 and 3-hour column fireproofing constructions as listed by Underwriters' Laboratories.

LIMITATIONS OF USE

1. Same as General Limitations, page 2.

2. In order to attain fire resistance ratings, the construction of the partition and/or floor and ceiling assemblies must be in accordance with the respective Underwriters' Laboratories, Inc., panel designs. See Fire Resistance Ratings, page 4 for description of panel constructions.

3. Maximum Spacing of Frame Members: 24" c to c.

Thickness: ½", ⅝"
Width: 4'
Length: 8', 9', 10', 12' or 14'
Edges: Tapered
Finish: Ivory manila paper, suitable for paint, wallpaper or other decoration.

INSULATING SHEETROCK

Insulating SHEETROCK Wallboard is made by laminating a sheet of bright aluminum foil on the back surface of any SHEETROCK. It is effective as a vapor barrier for exterior walls and ceilings when applied (1) with foil surface next to the studs in single layer application or (2) as the base layer (with foil surface next to the studs) in the double layer system. A thermal insulating value is achieved when SHEETROCK is installed with the aluminum foil facing an air space of ¾" minimum.

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*T. M. Reg. U. S. Pat. Off.

INSULATING SHEETROCK CON'T

Insulation. The bright metal foil has the property of reducing heat flow out of the structure in the winter, and into the structure in the summer. The thermal insulating value of an air space faced with Insulating SHEETROCK, properly applied, is equivalent to that of ½″ wood fiber insulating board. On ceilings, in summer, it is equivalent to approximately 2″ thickness of fiber insulating board.

Vapor Barrier. Insulating SHEETROCK provides an efficient vapor barrier which resists the passage of moisture vapor through the exterior wall and roof construction. The possibility of condensation within an exterior wall and resulting exterior paint failures is minimized.

Insulating SHEETROCK Wallboard meets the ASTM requirements for a vapor permeability not exceeding 0.30 perm for foil-backed gypsum wallboard.
(1 Perm = 1 grain of moisture/sq. ft./hr./inch of mercury vapor pressure difference)

LIMITATIONS OF USE

1. Same as General Limitations, page 2.
2. Do not use as a base for ceramic or other tile.

Thickness
Width
Length
Edges
Finish
} The same as regular SHEETROCK and BAXBORD

WOODGRAINED SHEETROCK

Special paper with a woodgrained finish is produced from photographic reproduction of natural wood and is laminated to the face of Regular SHEETROCK Wallboard. The application of this product has all the advantages of regular gypsum drywall construction (except reinforced joints) and provides a unique, realistic-appearing, woodgrained decoration. The factory finish may be further treated by applying either paste wax or satin finish varnish where additional protection is desired.

Colored nails are used for inconspicuous nailing.

Thickness: ⅜″
Width: 4′
Length: 7′, 8′, 9′ or 10′
Edges: Beveled edge—Sablewood and Cherrywood
Square edge—Ranch Pine
Finish: Predecorated—Sablewood, Cherrywood and Ranch Pine

Vinyl-Coated SHEETROCK
Vinyl-Coated Simulated Woodgrain SHEETROCK

A new highly scuff and stain resistant Vinyl Coated SHEETROCK in eight decorator colors and two simulated woodgrained finishes. Basic construction of the vinyl film is built up of two layers—a solid color vinyl or woodgrained paper covered with a clear vinyl. The entire thickness of vinyl is embossed to give it texture. Installed as face layer in double layer constructions or direct to studs with matching SHEETROCK Mouldings and/or colored nails.

LIMITATIONS OF USE

Do not laminate vinyl-coated SHEETROCK to base layer in double layer constructions with SHEETROCK Brand Contact Bond Adhesive.

Thickness: ⅜″, ½″, ⅝″
Width: 4′
Length: 8′, 10′
Edges: Beveled, Square
Finish: Soft Yellow, Soft Green, Soft Blue, Cerulean Blue, Near White, Medium Gray, Charcoal, Bittersweet, Sablewood, Brown Cherry.

1″ USG COREBOARD

USG Coreboards are 1″ thick solid gypsum board products fabricated for use with the USG Solid and Semi-Solid Partitions. Additional layers of gypsum board are generally laminated to the coreboard to provide the completed wall assembly. When used in conjunction with the 2″ Solid and Double Solid Partitions, coreboard is manufactured with an integrally formed "V" T & G edge. USG Coreboard, as used with the Semi-Solid Partition, is available in 1″ x 24″ panels prescored at 8″ o.c. Coreboard strips are then easily snapped and separated from this master unit.

Thickness: 1″
Width: 24″
Edge: "V" T&G or Square
Length: 8′, 9′, 10′ & 12′ (Prescored—7′-8″ only)
Finish: Gray paper, not suitable as an exposed surface.

BAXBORD* GYPSUM BACKING BOARDS

BAXBORD is a low cost, easy to handle gypsum board encased on both sides with strong gray paper.

Three-Eighths Inch—⅜″ BAXBORD is manufactured for use as a base for job-laminated Double Wall SHEETROCK Wallboard System, and SHEETROCK Wallboard TRUSSTEEL* Stud Partition System. It may also be used as a base for acoustical tile when applied pendicular to wood joists spaced not over 16″ o.c.

One-Half Inch—½″ BAXBORD is the recommended base for adhesively or mechanically applied acoustical tile. It may be screw applied to the USG Drywall Furring Channel; nailed to metal furring members or nailable steel joints; or nailed to wood framing

Five-Eighths Inch—⅝″ BAXBORD FIRECODE is manufactured for use as a base for adhesive or mechanical application of acoustical tile when a one-hour fire-rating is required. "V" tongue and groove edges minimize air and dirt infiltration.

LIMITATIONS OF USE

1. Same as General Limitations, Page 2.
2. In order to attain fire resistance ratings with ⅝″ BAXBORD FIRECODE, the construction must be in accordance with the floor or roof and ceiling design listed by Underwriters' Laboratories, Inc. See Fire Resistance Ratings, page 4.
3. Where ½″ or ⅝″ BAXBORD is to be used as acoustical tile base, store acoustical tile and base in a dry area protected from the elements. Provide flat, solid support during storage. Take necessary precautions to prevent condensation in the storage area and within the structure in which the acoustical base is applied

Thickness: BAXBORD—⅜″, ½″; BAXBORD FIRECODE—⅝″.
Width: ⅜″—2′ and 4′; ½″ and ⅝″—2′ only.
Length: 8′.
Edges: ⅜″ BAXBORD, round edge; ½″ BAXBORD and ⅝″ BAXBORD FIRECODE, "V" T & G Edge.
Finish: Gray paper, not suitable as an exposed surface.

SHEETROCK Ceiling Board

A gypsum board with a specially formulated sag-resistant core available in two sizes for easy installation in standard inverted metal "T" grid systems. It provides a low cost, incombustible ceiling with increased ceiling sound transmission loss, and which is ready for decorating.

Thickness: ⅜″, ½″
Size: 2′ x 2′ nominal or 2′ x 4′ nominal
Finish: Ivory manila paper suitable for paint, wallpaper or other decoration.

BENDING SHEETROCK

Dry SHEETROCK may be bent to the following radii:

SHEETROCK THICKNESS	Bending Radii	
	LENGTHWISE	WIDTH
½″	20′[1]	. .
⅜″	7½′	25′
¼″	5′	15′

[1] Bending two ¼″ pieces successively permits radii shown for ¼″ SHEETROCK.

By moistening the face and back paper thoroughly prior to application, and replacing in the stack for at least one hour the board may be bent to still shorter radii. When the board, dries thoroughly, it will regain its original hardness.

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*T. M. Reg. U. S. Pat. Off.

TECHNICAL DATA

FIRE RESISTANCE RATINGS FOR SHEETROCK GYPSUM WALLBOARD

TYPE CONSTRUCTION	FRAMING C TO C	GYPSUM WALLBOARD	RATING	REFERENCE
PARTITIONS—WOOD FRAMING Wood studs faced both sides as indicated	16″	⅜″ SHEETROCK	25 Minutes	NBS-BMS 92
		½″ "	40 Minutes	NBS-BMS 92
		½″ " (stud spaces filled with mineral wool batts)	1 Hour	NBS-BMS 92
		½″ " (stud spaces filled with loose mineral wool)	1 Hour	NBS-BMS 92
		½″ " FIRECODE*	45 Minutes	UL
		⅝″ " "	1 Hour ②	UL
		2 layers ⅜″ SHEETROCK	1 Hour	Fire Test. Lab.
		2 layers ½″ "	1½ Hours ①	NBS-FP 2708
		⅝″ SHEETROCK FIRECODE RC-1 SHEETROCK Resilient Channel	1 Hour	Fire Test. Lab.
		2 layers ⅝″ SHEETROCK FIRECODE	2 Hour	UL
PARTITIONS—STEEL FRAMING USG Metal Stud and related components faced both sides as indicated	24″	⅝″ SHEETROCK FIRECODE (Screw applied with 1″ USG Drywall Screws—Type S)	1 Hour ①	Fire Test. Lab.
		2 layers ⅝″ SHEETROCK FIRECODE (with or without Laminating Compound)	2 Hour ①	UL
Nailable steel stud and related components faced both sides as indicated	24″	⅝″ SHEETROCK FIRECODE	1 Hour ①	Fire Test. Lab.
TRUSSTEEL* Studs and related components faced both sides as indicated	24″	⅜″ SHEETROCK Face Layer, ⅜″ BAXBORD* Base Layer	45 Minutes ①	Fire Test. Lab.
		½″ SHEETROCK FIRECODE Face Layer, ⅜″ BAXBORD Base Layer	1 Hour ①	Fire Test. Lab.
CEILINGS—WOOD FRAMING Wood joists; wood rough and finish floor, and ceiling as indicated	16″	½″ SHEETROCK	25 Minutes	NBS-BMS 92
		½″ " FIRECODE	45 Minutes	UL
		⅝″ " "	1 Hour	UL
		2 layers ⅜″ SHEETROCK	30 Minutes	NBS-BMS 92
		2 layers ½″ " (1″ wire mesh fabric between layers)	1 Hour	NBS-FP 2926
CEILINGS—STEEL FRAMING Open web steel joists; reinforced concrete floor, and ceiling as indicated	24″	⅝″ SHEETROCK FIRECODE (Applied with 1″ USG Drywall Screws-Type S to DWC Furring Channel)	1½ Hours	UL
	16″	⅝″ SHEETROCK FIRECODE or BAXBORD FIRECODE (Applied with annular ring nails to Nailing Channels)	1 Hour ②	UL
PARTITIONS—SOLID GYPSUM BOARD 1″ USG "V" T&G Gypsum Coreboard faced both sides as indicated		½″ SHEETROCK	1½ Hour ①	Fire Test. Lab.
		½″ " FIRECODE	2 Hours ①	Fire Test. Lab.
		⅝″ " "	2 Hours ①	Fire Test. Lab.
Double row (Double Solid) of 1″ USG "V" T&G Gypsum Coreboard spaced apart 1⅛″, minimum, and faced on the outside as indicated.		½″ "	2 Hours ①	Fire Test. Lab.
STEEL COLUMNS		3 layers ⅝″ SHEETROCK FIRECODE (laminated)	3 Hours	UL
		4 layers ½″ SHEETROCK	2½ Hours	NBS Test 315
		3 layers ⅝″ SHEETROCK FIRECODE (no laminating compound)	2 Hours	UL
		3 layers ½″ SHEETROCK	1½ Hours	NBS Test 304
		2 layers ½″ SHEETROCK	1 Hour	NBS Test 303

General Note:

① Non-Bearing.

② Joints not taped or treated with compound.

A. Fire tests conducted at recognized laboratories in accordance with ASTM Specifications. Complete test data available from United States Gypsum upon request.

B. Ratings on partitions apply to both load bearing and non-load bearing assemblies except as noted.

C. Ratings are based on assemblies with surface wallboard joints reinforced with joint compound and tape and nail or screw heads treated except as noted.

D. Ratings on multi-layer assemblies are based on the use of PERF-A-TAPE Compound as a laminating adhesive, except as noted.

APPLICATION DATA—SHEETROCK WALLBOARD

THICKNESS	APPROX. WEIGHT PER SQUARE FOOT	SIZE SHEETS	LOCATION	APPLICATION METHOD	MAX. ALLOWABLE FRAME SPACING C. TO C.	
					WOOD	STEEL
⅜″ Taper Edge	1.5	4′x8′ to 14′	Ceilings	Horizontal	16″	16″
⅜″ Taper Edge	1.5	4′x8′ to 14′	Sidewalls	Horizontal or Vertical	16″	16″
½″ Taper Edge	2.0	4′x8′ to 14′	Ceilings	Vertical Horizontal	16″ 24″	16″ 24″
½″ Taper Edge	2.0	4′x8′ to 14′	Sidewalls	Horizontal or Vertical	24″	24″
⅝″ Taper Edge	2.6	4′x8′ to 14′	Ceilings	Vertical Horizontal	16″ 24″	16″ 24″
⅝″ Taper Edge	2.6	4′x8′ to 14′	Sidewalls	Horizontal or Vertical	24″	24″

*T.M. Reg. U.S. Pat. Off.

TECHNICAL DATA—SOUND TRANSMISSION LOSS

TEST LAB.	TEST NO.	DATE	PARTITION CONSTRUCTION	FREQUENCY—cps											S.T.L. Ave. (db)	S.T.L. CLASS
				125	175	250	350	500	700	1000	1400	2000	2800	4000		
	2" x 4" Wood Studs—16" C to C And Faced As Indicated.															
Riverbank Acoustical Laboratories (1)	TL 57-15	12/21/56	⅝" SHEETROCK* Gypsum Wallboard (Single layer each side)	18	19.5	26.5	31	33.5	37	40.5	40	39.5	42	45	32	35
	TL 57-14	12/20/56	⅜" SHEETROCK (Double layer each side)	19	23	30.5	35.5	38.5	41	43.5	45	45.5	45	46	36	38
	TL 60-52	12/31/59	⅝" SHEETROCK (Single layer on RC-1 Resilient Channel (each side)	29.5	32.5	39.5	43.5	46	48	50	51	49	44	49	43	45
	TL 61-10	9/22/60	⅝" SHEETROCK screw attached to RC-1 Channel each side and ½" SHEETROCK laminated one side only	34	38	43	48	50	51	51	52	48	46	55	46	47
	Solid Gypsum Board Partitions—USG* 1" (V) T & G Coreboard, Faced as indicated.															
	TL 59-98	8/4/59	2" Solid—⅝" SHEETROCK (each side)	34.5	35	36	37.5	36	34	33.5	34.5	36	37.5	39	36	34
	TL 60-19	8/28/59	Double Solid—(Double row of coreboard with 1⅛" air space) ½" SHEETROCK each face	35	37.5	41.5	46	49	50	47	43.5	49	54	57	46	42
	TL 62-122	1/29/62	Double Solid—(Double row of coreboard with 3" air space) ⅝" SHEETROCK one side & ½" SHEETROCK on the other	39	41	45	48	48	48	49	46	50	51	57	47	46
	USG 3⅝" Metal Studs—24" C to C And Faced As Indicated.															
	TL 59-99	8/4/59	⅝" SHEETROCK (Single layer each side)	29	32.5	36.5	38	40.5	43.5	46	46	39.5	39.5	46	39	38
	TL 60-113	4/26/60	⅝" SHEETROCK (Double layer each side)	35	37.5	43	48	50	50	50	47.5	43.5	49	54.5	46	46
	TL 62-180	3/21/62	⅝" SHEETROCK (Double layer one side. Single layer attached to stud on the other and faced with RC-1 Channel and second single layer)	36	38	41	46	47	48	52	54	50	52	58	46	50
	TL 62-212		Same as TL 62-180 except 3" THERMAFIBER* Wool Blanket is mounted in partition cavity tight to one side.	41	42	46	48	49	48	51	51	50	55	60	48	51
	2" x 4" Wood Studs—16" C to C And Faced As Indicated.															
Geiger And Hamme (2)	USG 31 FT	2/21/62	⅝" SHEETROCK (Single layer direct to stud one side, Single layer to RC-1 Channel on other side)	24	29	33	39	39	50	51	53	46	42	48	40	43
	USG 32 FT	2/22/62	⅝" SHEETROCK (Double layer one side. Single layer to RC-1 Channel on other side)	29	32	37	42	43	51	55	55	51	50	53	44	47
	USG 33 FT	2/23/62	⅝" SHEETROCK (Single layer direct to stud one side. Single layer to RC-1 Channel on other side. 3" THERMAFIBER Wool Blanket is mounted in partition cavity tight to RC-1 Channel side)	32	36	42	46	52	54	58	55	53	53	54	47	52
	Slotted(3) 2" x 4" Wood Studs—16" C to C And Faced As Indicated.															
	USG 27 FT	2/8/62	⅝" SHEETROCK (Single layer each side)	25	30	34	40	40	46	48	50	42	43	47	39	43
	USG 28 FT	2/8/62	⅝" SHEETROCK (Double layer attached on one side and single layer on the other.)	29	34	39	43	44	50	51	51	46	49	53	43	48
	USG 29 FT	2/8/62	⅝" SHEETROCK (Single layer each side. 3" THERMAFIBER Wool Blanket mounted in stud space tight to one side)	31	33	42	45	49	51	51	52	46	48	50	44	48

TEST LAB	TEST NO.	DATE	CEILING CONSTRUCTION	FREQUENCY—cps											S.T.L. Ave. (db)	Impact S.T.L. (db)
				125	175	250	350	500	700	1000	1500	2000	3000	4000		
National Bureau Of Standards	Panel No. 717 (4)	12/7/59	⅝" SHEETROCK attached to RC-1 Resilient Channels.	43	44	41	41	41	49	52	53	50	56	60	48	11

(1) Tests conducted in accordance with ASTM E-90 and American Standards Assoc., Designation Z 24.19.

(2) Tests conducted in accordance with Acoustical Materials Assoc., tentative method of tests—AMA-1-II.

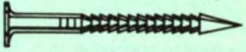
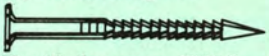
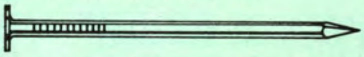
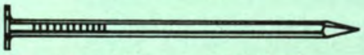
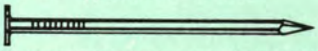
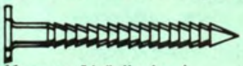
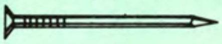
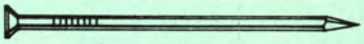
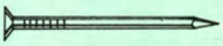
(3) Use of Slotted Wood Studs is covered by U.S. Patent No. 2,922,201—issued to U.S. Gypsum Company.

(4) 2" x 8" Wood Joist 16" C to C; ¾" wood sub-floor, building paper, and ¾" T&G Finish Floor; ceiling as indicated.

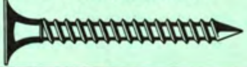
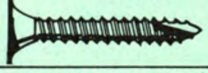
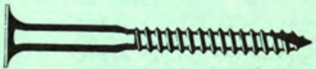
*T. M. Reg. U. S. Pat. Off.

TECHNICAL DATA | FASTENERS

NAIL ATTACHMENT TO WOOD FRAME

GYPSUM WALLBOARD	ATTACH FRAME	FASTENER	SPACING c to c (1)	Approx. lbs/M Sq. Ft. (2)
½", ⅜" and ¼" SHEETROCK* Wallboard; ½" and ⅜" BAXBORD* Gypsum Backing Board	Direct to Wood Frame	**1¼" GWB-54 Annular Ring Nail**  12½ gauge; ¼" dia. head with a slight taper to a small fillet at shank; bright finish; medium diamond point.	7" Ceiling 8" Walls	5¼ (325)
⅝" SHEETROCK Wallboard		**1⅜" Annular Ring Nail**  (Specification same as GWB-54 except for length)	7" Ceiling 8" Walls	5¼ (321)
⅜" and ¼" SHEETROCK Wallboard	Over Existing Surface, Wood Frame	**1⅞" 6 d Gypsum Wallboard Nail**  Cement Coated, 13 gauge, ¼" dia. head	7" Ceiling 8" Walls	6¼ (275)
⅝" SHEETROCK FIRECODE* Wallboard	Direct to Wood Frame	**1⅞" 6 d Gypsum Wallboard Nail**  Cement Coated, 13 gauge, ¼" dia. head	6" Ceiling 7" Walls	6¾ (278)
½" SHEETROCK FIRECODE Wallboard		**1⅝" 5 d Gypsum Wallboard Nail**  Cement Coated, 13½ gauge, 15/64" dia. head	6" Ceiling 7" Walls	5¼ (366)
⅝" SHEETROCK FIRECODE Wallboard; ⅝" BAXBORD FIRECODE Gypsum Backing Board	Direct to Steel Nailing Channel	**1¼" Fetter Annular Ring Nail**  11 gauge, 5/16" dia. head	6" Ceiling	6 (315)
Woodgrained SHEETROCK—Wallboard Vinyl-Coated Woodgrained SHEETROCK—Wallboard	Direct to Wood Frame	**1⅛" USG* Matching Color Nail (Steel)** 	8" Walls	1½ (1,008)
	Over Existing Surface, Wood Frame	**1⅞" USG Matching Color Nail (Steel)** 	8" Walls	4½ (349)
Vinyl-Coated SHEETROCK Wallboard (8 colors)	Direct to Wood Frame	**1⅛" USG* Matching Color Nail (Brass)** 	8" Walls	1¾ (901)

SCREW ATTACHMENT WOOD OR STEEL FRAME

⅝", ½" and ⅜" SHEETROCK Wallboard; ½" and ⅜" BAXBORD Gypsum Backing	Direct to Wood Frame	**1¼" USG* Drywall Screw**  Type W	(3)	1000 screws 1000 sq. ft.
⅝", ½" and ⅜" SHEETROCK Wallboard; ½" and ⅜" BAXBORD Gypsum Backing Board	USG Metal Stud and/or Drywall Furring Channel	**1" USG Drywall Screw**  Type S	12" Ceiling 12" Walls (4)	875 screws 1000 sq. ft.
⅜", ½", and ⅝" SHEETROCK Wallboard (Attachment of second layer Wallboard to steel frame in double wall construction.)		**1⅝" USG Drywall Screw**  Type S	(5)	Varies, Depending on 2-Layer System

NOTES:

1. Spacings shown are for single layer application.
2. Pounds of nails shown are per M square foot of Sheetrock Wallboard. Figure shown in parentheses, is approximate quantity of fasteners per pound.
3. 12" c to c on ceilings—16" c to c on walls on 16" framing. 12" c to c on ceilings—12" c to c on walls on 24" framing.
4. FOR ONE HOUR FIRE RATING — 12" c to c in field of board and 8" c to c staggered at vertical joints on walls
5. 16" c to c on walls and ceilings when installed permanently without laminating adhesive; or as required for temporary mechanical attachment while laminating adhesive dries.

*T. M. Reg. U.S. Pat. Off.

WOOD FRAMING REQUIREMENTS

Wood framing meeting the following minimum requirements is necessary for proper performance of all gypsum wallboard fasteners.

1. Framework shall meet the minimum requirements of FHA and local building codes.
2. Framing members shall be straight, true, of uniform dimension, and framing shall be properly aligned.
3. All framing lumber shall be of a good grade for the intended use, and 2″ x 4″ nominal size or larger shall bear the grade mark of a recognized inspection agency using grading rules for lumber recommended to American Lumber Standards Committee.
4. All framing lumber shall have a moisture content not in excess of 15% at time of gypsum wallboard applications.
5. Do not attach gypsum wallboard to extremely soft framing members.

Failure to observe these minimum framing requirements, which are applicable to both screw and nail attachment, will materially increase the possibility of ineffective fastening concealment, due to warping or dimensional changes. This is particularly true if framing lumber has greater than normal tendencies to warp or shrink after erection.

HEATING AND VENTILATION RECOMMENDATIONS

Framing should approach as closely as possible the moisture content it will reach in service by allowing the house, after it is enclosed, to stand as long as possible prior to the application of the gypsum wallboard. Provide heat in winter or during damp conditions at a uniform temperature in the range of 50° to 70°F. Provide ventilation to remove excess moisture.

USG DRYWALL SCREWS

DESCRIPTION

USG Drywall Screw, Type W, was designed specifically for the attachment of gypsum wallboard to wood framing. In single layer application, the screw virtually eliminates loose attachment of gypsum boards.

All screws have been designed to give top performance:

1. Contour Head—Gently folds down manila face paper, minimizes cutting at peripheral edge of screw head.
2. Double-lead Thread—Produces required optimum speed of entry through gypsum board and into framing member.
3. Diamond Point—Drills through face paper and board core into framing member with moderate pressure.

FUNCTION AND UTILITY

Fracture: Minimizes fracturing of the gypsum core which is often caused when fasteners are driven with a hammer.

Automatic: The screws' diamond point penetrates easily. Automatically draws the SHEETROCK Gypsum Wallboard tight to the framing. The direction of penetration is positive, and the Double-lead Thread allows optimum speed of entry.

Fasteners: Fewer fasteners are needed—means less spotting and less joint compound.

Dimple: Mechanically controlled dimples are uniform, minimizes the chance of surface damage. Eliminates paper tearing and core fracturing associated with nailing.

Interior Angle Method: The advantages of the "floating" interior angle method can be fully utilized. This method is recommended.

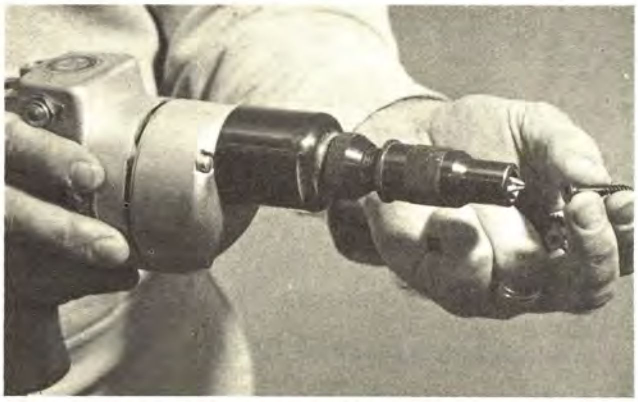
Performance: Outstanding results have been obtained through testing in comparison with the GWB-54 nail. The USG Drywall Screw in wood framing has shown to have 100% greater withdrawal resistance, and over 100% greater "push off" resistance. Additional test performance information is available from your USG Architect Service or Sales Representatives.

Framing: It is recommended that the "Framing Requirements" shown above be followed.

Tools: A specifically designed, positive clutch, production model, electric screw gun equipped with adjustable screw depth control head and No. 2 Phillips bit which operates at 1,500 RPM will give the best result. Additional information is available from your USG Architect Service or Sales Representative.

LIMITATIONS: Good framing is essential for proper performance of the USG Drywall Screw-Type W (See framing requirements). Spacing of framing should not exceed maximum allowable for the thickness of Gypsum Board to be used. Check all screws for proper depth during application. Do not use a hammer for driving screws to proper depth. If the screw cannot be driven to the proper depth, remove the screw and drive a new screw in the vicinity of the original one.

FOR BEST RESULTS, CHECK WOOD FRAME TO ASSURE TRUE ALIGNMENT.



ELECTRIC SCREW GUN EQUIPPED WITH ADJUSTABLE SCREW DEPTH CONTROL ASSURES GREATER UNIFORMITY OF PENETRATION.

RAPID DRIVE—MAINTAINING DIRECTION AND DEPTH OF PENETRATION.

PARKERIZED FINISH MINIMIZES RUSTING; SPOTTING WITH THREE COATS OF JOINT COMPOUND IS EASY.

BACK-BLOCKING JOINT REINFORCEMENT SYSTEM

Back-Blocking is a system designed to minimize an inherent joint deformation ("ridging") in gypsum wallboard construction, which sometimes occurs under a combination of adverse job and weather conditions. The Back-Blocking System, developed by United States Gypsum Co., has been widely used for a number of years and produces outstanding results. This system is patented (Pat. No. 2736929) and may be used under a non-exclusive license agreement, readily available upon request.

Back-Blocking consists of laminating cut-to-size pieces of SHEETROCK Wallboard to the back surface of the wallboard directly behind the joints providing reinforcement to resist stresses which cause ridging.

We recommend Back-Blocking all joints along tapered edges, and floating and Back-Blocking all end joints, on both side walls and ceilings. End joints on both side walls and ceilings may be tapered by the Back-Blocking method at the discretion of the owner, architect, contractor or applicator.

USG JOINT STABILIZING COMPOUND

USG Joint Stabilizing Compound is a specially formulated adhesive, that when properly used, provides another system to reduce or minimize the incidence of ridging or beading.

GENERAL

1. Protect from freezing. Store in a warm place for at least 24 hours before using.
2. Thinning is not advisable.
3. Compound must dry thoroughly before additional joint treatment materials are applied.
4. During cold weather application provide continuously controlled heat to maintain 40°F minimum temperature until house is occupied.

Single Layer Gypsum Wallboard Construction

Attach the first gypsum board to the ceiling structural members using the conventional and recommended method of attachment. Extrude and apply a continuous ¼″ triangular flow of USG Joint Stabilizing Compound along that board edge which will be abutted by the next board. The second board is then immediately fitted in place and attached. This abutting of boards permits the Compound to spread evenly over the adjacent edges and on the back side forming a "weld." Promptly remove any excess Compound from the face surface after each board is joined and securely fastened. Subsequent attachment of gypsum boards on the balance of the ceiling and sidewalls are handled in like manner.

Coverage: Approximately 1 gallon per house of 1,000 square feet of floor area in all wall and ceiling joints—no angles need stabilizing.

SYSTEM LIMITATIONS

1. Sufficient Compound must be applied to develop good bond at the joints. A ¼″ triangular flow of Compound is recommended for single layer construction.
2. The only adhesive recommended for this system is USG Joint Stabilizing Compound.
3. Use Ready Mixed PERF-A-TAPE* Joint Compound to reinforce and conceal wall and ceiling joints and intersections.

SINGLE LAYER SYSTEM—WOOD FRAMING

Wallboard for walls, ceilings, partitions

DESCRIPTION

SHEETROCK is normally nailed or screwed direct to wood framing members, first applying ceilings, then sidewalls. Application may be either vertical—with long edges parallel to framing members, or horizontal—with long edges at right angles to framing. The fastening may be any one of several attachment methods; however, single nailing is considered the conventional practice. The joints and fastener-heads, following completion of attachment, are then usually treated with PERF-A-TAPE Joint System.

ALTERNATE FASTENING METHODS

1. Double Nailing Method. Nailing defects due to loosely nailed wallboard, may be minimized by double nailing. Apply first nails spaced 12″ o.c. with the second nail in close proximity (2″). Double nailing is generally more effective in combating loose application of wallboards than the standard single nailing method, but does not provide the advantages of SHEETROCK Brand Adhesive/Nail-On Method in minimizing "nail-pop" frequency due to wet lumber.

2. SHEETROCK Brand Adhesive/Nail-On Method—Refer to Specifications—SHEETROCK Brand Adhesive, page 14.

FUNCTION AND UTILITY

Horizontal Application—The following advantages with horizontal application are offered compared to vertical application:

1. Reduces necessary joint treatment footage up to 25%.
2. Strongest dimension of board runs across framing members.
3. Spans uneveness of framing member alignment and spacing.
4. Eliminates the need for headers and additional blocking.
5. Each board ties more framing members together.
6. Joints on walls are at a convenient height for finishing.

SPECIFICATIONS

SINGLE LAYER SHEETROCK SYSTEM
(Treated Joints)

***NOTE TO ARCHITECT:* For specifications covering PERF-A-TAPE Joint System, see Pages 12 and 13**

I. SCOPE

Furnish all labor, materials and equipment to surface all interior walls and ceilings, with gypsum wallboard in accordance with specifications and drawings.

NOTE TO ARCHITECT: *When Back-Blocking is to be specified, include the following:*

A. *All ceiling end joints shall be floated, back-blocked and tapered (except at perimeter of room).*
B. *All ceiling edge joints shall be back-blocked (except at perimeter of room).*
C. *All side wall edge joints shall be back-blocked.*
D. *All side wall end joints shall be floated, back-blocked and tapered.*

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*T. M. Reg. U. S. Pat. Off.

II. GENERAL CONDITIONS

In cold weather the building shall be heated during the application of the gypsum wallboard to maintain a uniform temperature in the range of 45° F. to 70° F., and ventilation shall be provided to eliminate excessive moisture.

All materials, as specified above, shall be delivered to the job in original unopened containers or bundles, stored in a place protected from exposure to the elements and from damage by tampering, and used in strict accordance with manufacturer's directions.

III. MATERIALS

A. GYPSUM WALLBOARD—shall be SHEETROCK Gypsum Wallboard manufactured by the United States Gypsum Company in the following types and sizes as required:

1. (⅜") (½") (⅝") Tapered Edge (Plain) (Insulating) SHEETROCK 48" wide and in lengths as long as practical to minimize the number of joints.

2. (½") (Plain) (Insulating) ½" and ⅝" SHEETROCK FIRECODE, 48" wide and in lengths as long as practical to minimize the number of joints.

3. ⅜" simulated Woodgrained SHEETROCK 48" wide and in lengths as required.

4. ⅜" Vinyl-Coated or Vinyl-Coated simulated Woodgrained SHEETROCK 48" wide in lengths up to 10′.

NOTE TO ARCHITECT: When Back-Blocking is to be specified, include the following:

Backing-blocks shall be ⅜", ½" or ⅝" SHEETROCK Gypsum Wallboard manufactured by United States Gypsum Company. When foil-backed backing-blocks are used, adhesive shall be applied to manila face side of blocks, not to foil side. Adhesive shall be PERF-A-TAPE Joint Compound (embedding type) manufactured by United States Gypsum Company.

B. FASTENERS—Nails shall conform with "Recommended Performance Standards for Nails for Gypsum Wallboard," adopted by the Gypsum Association and the Gypsum Drywall Contractors International, or as follows:

1. Fire resistive constructions with—
   ½" SHEETROCK FIRECODE—5d Gypsum Wallboard type, 1/32" flat head, 13½ gauge, medium diamond point.

   ⅝" SHEETROCK FIRECODE—6d Gypsum Wallboard type, ¼" flat head, 13 gauge, medium diamond point.

2. Simulated Woodgrained SHEETROCK application—1⅛" Predecorated Steel Nails, matching color.

3. Vinyl-Coated SHEETROCK application—1⅛" Predecorated brass Nails, matching color.

4. Screws—shall be 1¼" USG Drywall Screw—Type W.

C. CORNER BEAD—shall be USG DUR-A-BEAD*, PERF-A-BEAD* and Econo Corner Reinforcement.

D. METAL TRIM—shall be USG:

1. (#300) (#301) PERF-A-TRIM*
2. (#400) (#401) (#402) Metal Trim.
3. (#200-A) (#200-B) (#200-C) MetalTrim.

IV. ERECTION

All ends and edges of all Gypsum Wallboard shall occur over nailing members, except when joints are at right angles to framing members as in horizontal application or when the end joints are to be back-blocked.

NOTE TO ARCHITECT: When Back-Blocking is to be specified, include the following and delete the preceding paragraph:

A. All SHEETROCK Gypsum Wallboard shall be applied with the long edges at right angles to the framing. (Wood backing behind joints between framing supports is not required.)

B. Gypsum Wallboard shall be so positioned that the end joints shall occur midway between supports and all end and edge joints shall be back-blocked and tapered in accordance with directions published by the United States Gypsum Company.

SHEETROCK shall be applied first to the ceiling and then to the walls. To minimize end joints, use wallboard of maximum practical lengths. Boards shall be brought into contact, but shall not be forced into place. Where ends or edges abut, they shall be neatly fitted.

End joints shall be staggered. Joints on opposite sides of a partition shall be so arranged as to occur on different studs.

Fasteners shall be spaced not less than ⅜ inch from edges and ends of wallboard. Fasteners on all framing members shall be spaced and driven as recommended for specified fastening method. Nails shall not be staggered on adjoining edges or ends. Screws shall be staggered on adjoining edges or ends.

NOTE TO ARCHITECT: Specify fastening method.

Wallboard shall be attached to framing supports by:

A. Standard Single Nailing Method

B. Adhesive—Nail-On Method (Specification on page 14)

C. Double Nailing Method.

D. Power driven 1¼" USG Drywall Screw—Type W.

While the fasteners are being driven, the wallboard shall be held in firm contact with the underlying support. Attachment should proceed from central portion of the wallboard toward ends and edges. When nails are used for attaching gypsum wallboard, the nails shall be driven home with the heads slightly below the surface of the gypsum wallboard, in a dimple formed by the crowned face of the driving tool striking the last blow. A nail set shall not be used and care shall be taken to avoid breaking the paper face.

When necessary to cut ends, edges, scribe or make cutouts within the field of the wallboard, it shall be done in a workmanlike manner.

Corner Bead shall be applied to all external angles in strict accordance with the manufacturer's directions.

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*T.M. Reg. U.S. Pat. Off.

DOUBLE WALL SYSTEM—WOOD FRAMING

Wallboard for walls, ceilings, partitions.

DESCRIPTION

This consists of two layers of gypsum wallboard laminated together on the job. A base layer of BAXBORD or SHEETROCK is nailed or screwed to the framing, and a face layer of SHEETROCK is adhesively applied to the base layer. SHEETROCK joints are reinforced and covered by PERF-A-TAPE Joint System.

FUNCTION AND UTILITY

Walls and ceilings so constructed offer greater strength, greater fire resistance and greater resistance to sound transmission. Moreover, they're highly resistant to cracking, easy to decorate. They minimize the possibility of nail "pops" and discoloration over nail heads. Speedy erection cuts building time, permits early occupancy.

LIMITATIONS OF USE—See General Limitations, page 2

1. Maximum Spacing of Framing Members;
   Ceilings—⅜″ Base layer maximum spacing 16″ o.c.
   If 24″ spacing is to be used, ½″ SHEETROCK or ½″ BAXBORD applied with the long dimension across the framing must be used as a base layer.

   Side walls—⅜″ BAXBORD or SHEETROCK may be used on spacing up to 24″ c to c as a base layer.
2. Framing shall be spaced not over 16″ c to c where a 1 hour fire rating is required.

SPECIFICATIONS

NOTE TO ARCHITECT: For Specifications covering PERF-A-TAPE Joint System, see Pages 12 and 13.

I. SCOPE

Furnish all labor, material and equipment necessary to surface all interior walls and ceilings with Gypsum Wallboard in accordance with the specifications and drawings.

II. GENERAL CONDITIONS

In cold weather, the building shall be heated during the application of the Gypsum Wallboard to maintain a uniform temperature in the range of 45° F. to 70° F. and ventilation shall be provided to eliminate excessive moisture.

All materials as specified shall be delivered to the job in original unopened containers or bundles, stored in a place protected from exposure to the elements and from damage by tampering, and used in strict accordance with manufacturer's directions.

III. MATERIALS

A. GYPSUM WALLBOARD—shall be (Plain) (Insulating), (⅜″ BAXBORD, 4′ x 8′, round edge) (⅜″ SHEETROCK, 4′ wide, lengths from 8′ to 14′) (½″ SHEETROCK, 4′ wide lengths from 8′ to 14′) (½″ BAXBORD, 2′ wide, length 8′) as manufactured by the United States Gypsum Company.

B. FASTENERS—Nails shall conform with "Recommended Performance Standards for Nails for Gypsum Wallboard", adopted by the Gypsum Association and the Gypsum Drywall Contractors International.

Screws—screws shall be 1¼″ USG Drywall Screws—Type W.

C. TOOLS—Notched spreader blade.

D. LAMINATING ADHESIVE—shall be USG PERF-A-TAPE Joint Compound (embedding type).

E. CORNER BEAD—shall be USG DUR-A-BEAD, PERF-A-BEAD), or Econo Corner Reinforcement.

IV. ERECTION

A. BASE LAYER

1. CEILINGS: ⅜″ BAXBORD shall be applied with long edges at right angles to framing members. End joints may occur on or between framing members, and shall be positioned to offset face layer joints by at least 10″.

   NOTE: ½″ SHEETROCK or ½″ BAXBORD shall be applied perpendicular to ceiling joists spaced 24″ c to c.
2. WALLS: ⅜″ BAXBORD shall be applied with long edges parallel to and centered on framing members.
3. NAIL ON ATTACHMENT: The base layer shall be nailed to framing members with nails spaced 7″ on ceilings and 8″ on side walls, the nail heads driven flush with surface of the board.
4. STAPLE ATTACHMENT
   The base layer shall be attached to the framing members with power driven staples—16 U.S. standard gauge galvanized wire, flat, ½″ wide, 1″ long with divergent points. Spacing shall be the same as specified for nail attachment.
5. SCREW ON ATTACHMENT
   The base layer shall be screw applied to framing members with power driven 1¼″ USG Drywall Screws—Type W, spaced 16″ c to c on framing spaced 16″ c to c and 12″ c to c on framing spaced 24″ c to c.

B. FACE LAYER

The face layer shall be ⅜″ tapered edge SHEETROCK Gypsum Wallboard of sufficient length, up to 14′, to span wall and ceiling areas. All joints shall be loosely butted. All joints on face layer shall fall at least 10″ from parallel joints in base layer.

After cutting the face layer panels to size, adhesive shall be spread over the laminating surface of face or base layer wallboard with a notched spreader blade. The adhesive shall be mixed to the consistency recommended by the manufacturer. The notched spreader shall be used in a manner to produce an irregular ribbon pattern of adhesive. Adhesive shall extend up to the ends and edges of all board.

The face layer shall be temporarily held in place with either nails of sufficient length to penetrate a minimum of ¾″ into the nailing member, or by temporary bracing, shoring, or by means of a double headed nail to which a large fiber or wood washer is applied. Temporary nailing or bracing should provide support every 16″ to 24″.

When proper bond is developed between the two layers, the temporary nails or bracing shall be removed. When this system is used to attain a 1-hour fire rating, the nails in the face layer shall be spaced 8″ o.c., shall remain in place, and be finished the same as for single layer construction.

C. ACCESSORIES

1. Corner bead shall be applied to all external angles.

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*T. M. Reg. U. S. Pat. Off.

SHEETROCK WALLBOARD AS A BASE FOR ADHESIVELY APPLIED CERAMIC OR OTHER TILE

DESCRIPTION

SHEETROCK, as basically applied in accordance with the single layer system, provides an excellent base for the adhesive application of ceramic, metal and plastic tile in such areas as kitchens, bathrooms, corridors and stairways. Successful installation depends on proper framing procedures, application of the gypsum wallboard so that butt joints may be eliminated, and complete wallboard surface coverage with a water resistant sealer.

FUNCTION AND UTILITY

Using SHEETROCK as a base, new tilework may be installed over existing surfaces without tearing out old walls. Erection is fast; there is no waiting for mortar coats to set; there is less cleanup afterwards. SHEETROCK as a base is lightweight, yet strong; it is easy to handle. There may be some overall lowering of initial and maintenance costs.

LIMITATIONS OF USE

1. Insulating (foil backed) SHEETROCK or BAXBORD should not be used as backing for tile.
2. Adequate protection against wetting must be provided.
3. When ½″ or ⅝″ SHEETROCK is used on studs spaced more than 16″ c to c suitable blocking shall be installed between studs: one row of blocking located approximately 1″ above the top of the tub or receptor and another row at the mid point between the tub and ceiling.

SPECIFICATIONS

I. SCOPE

Gypsum Wallboard shall be applied as a base for (ceramic) (metal) (plastic) tile on all areas where tile is to be used as a finished surface unless otherwise indicated.

II. GENERAL CONDITIONS

All materials as specified shall be delivered to the job in original unopened containers or bundles, stored in a place protected from exposure to the elements, from damage by tampering, and used in strict accordance with the manufacturer's directions.

Appropriate blocking, headers or supports shall be provided to support tub, other plumbing fixtures and to receive soap dishes, grab bars, towel racks or similar items as may be required.

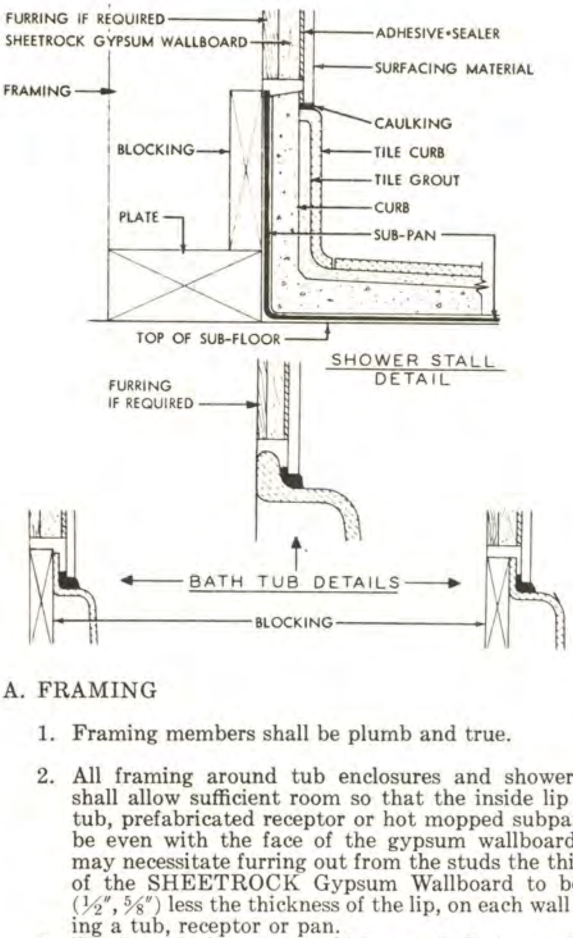
The tile installation shall prevent the passage of water to the backing material.

III. MATERIALS

1. GYPSUM WALLBOARD—shall be (½″) (⅝″) Tapered Edge SHEETROCK Gypsum Wallboard, 4′ wide and in lengths as long as practical to eliminate excessive joints, as manufactured by United States Gypsum Company.
2. JOINT TREATMENT—shall be PERF-A-TAPE Joint System as manufactured by United States Gypsum Company.
3. FASTENERS—Nails shall conform with "Recommended Performance Standards for Nails for Gypsum Wallboard", adopted by the Gypsum Association and the Gypsum Drywall Contractors International.

   Screws—screws shall be 1¼″ USG Drywall Screws—Type W.
4. SURFACE SEALER—SHEETROCK Sealer as manufactured by United States Gypsum Company.
5. TILE ADHESIVE—shall be approved by the manufacturer of the surfacing material for use over gypsum wallboard.
6. WATERPROOF RECEPTORS—Pans or sub-pans shall have an upstanding lip or flange which shall be a minimum of 1″ higher than the water dam or threshold contained in the entry way to the shower.

IV. ERECTION AND INSTALLATION



SHOWER STALL DETAIL

A. FRAMING

1. Framing members shall be plumb and true.
2. All framing around tub enclosures and shower stalls shall allow sufficient room so that the inside lip of the tub, prefabricated receptor or hot mopped subpan shall be even with the face of the gypsum wallboard. This may necessitate furring out from the studs the thickness of the SHEETROCK Gypsum Wallboard to be used (½″, ⅝″) less the thickness of the lip, on each wall abutting a tub, receptor or pan.
3. Furring of the proper thickness shall be applied as required parallel to the lip of receptor, pan or tub. The top of furring shall be flush with the upper outside edge of receptor, pan or tub.
4. Suitable blocking shall be installed between studs when the gypsum wallboard base is to be surfaced with

ceramic tile over ¼″ thick. One row of blocking shall be located approximately 1″ above the top of the tub or receptor and another row at mid-point between the tub and ceiling.

(Blocking is not required for ½″ or ⅝″ gypsum wallboard on stud spaced 16″ o.c. or less.)

B. RECEPTORS

Shower pans, receptors or tubs shall be installed prior to the erection of the gypsum wallboard.

C. GYPSUM WALLBOARD

1. ½″, ⅝″ SHEETROCK Gypsum Wallboard shall be applied horizontally with the factory edge (paper bound) abutting the top edge of a temporary wood strip (or nail spaces) which shall allow a minimum of a ¼″ space between the lip of the receptor, tub or sub-pan and the Gypsum Wallboard.
2. The SHEETROCK shall be fastened in the conventional manner. Exception: Where ceramic tiles over ¼″ thick are to be used as a surfacing material, nails shall be spaced 4″ c to c maximum and screws 8″ c to c maximum.
3. All joints between adjacent pieces of wallboard, including those at all angle intersections, shall be "treated".

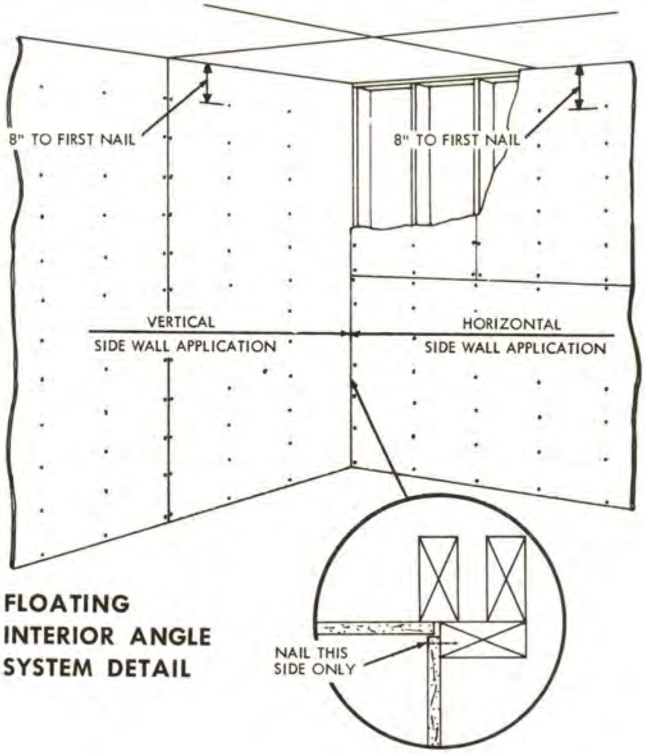
D. APPLICATION OF SURFACING MATERIAL

1. Prior to the erection of surfacing materials, a SHEETROCK Sealer shall be applied to the entire surface of the gypsum wallboard, following treatment of joints and angles.
2. Prior to the erection of surfacing materials, all openings around pipes, fixtures, etc., shall be caulked flush with waterproof, non-hardening caulking compound.
3. The surfacing material shall then be applied down to the top edge of the shower floor surfacing material, return or tub lip and installed so as to overlap the lip or return of the tub or receptor.
4. The surfacing material shall be applied so as to completely cover the following areas:
   (a) over tubs without shower heads—6″ above the rim of the tub.
   (b) over tubs where showers occur a minimum of 5 feet above the rim or 6″ above the height of the shower head, whichever is higher.
   (c) shower stalls—a minimum of 6 feet above the shower dam or 6″ above the shower head, whichever is higher.
   (d) all jambs in shower stall shall be covered to a like height.
   (e) all areas extending beyond the face of the tub shall be covered a minimum of 4″ from the required height to the finished floor of the bathroom (below rim of tub). Areas beyond an exterior corner are excluded.
5. Regardless of the types of surfacing materials are used, the following precautions shall be taken:
   (a) Grout all joints completely and continuously to prevent water penetration.
   (b) Nonsetting caulking compound shall be applied between the wall surfacing materials and the shower floor surfacing or tub rim.
   (c) The angle between the tub edge and the surfacing material shall likewise be caulked.

FLOATING INTERIOR ANGLE SYSTEM

DESCRIPTION

SHEETROCK Wallboard is applied in a manner whereby certain nails are eliminated in all interior angles. This includes horizontal angles formed by the intersection of ceilings and sidewalls and vertical angles where sidewalls intersect. This installation system may be used with either the (1) single nailing (2) double nailing application method or power driven 1¼″ USG Drywall Screw—Type W application.



FLOATING INTERIOR ANGLE SYSTEM DETAIL

FUNCTION AND UTILITY

The "floating angle" system of installation was designed to provide for relief of stresses at the intersections of framed walls and ceilings. When properly used, this system will effectively reduce nail pops and angle cracking which can result from these stresses.

LIMITATIONS OF USE—See General Limitations, page 2

1. The system does not eliminate the need for conventional framing requirements and ordinary wood back-up or blocking at vertical internal angles.

SPECIFICATIONS

NOTE TO ARCHITECT: The sections covering Scope, General Conditions and Materials under Single Layer Sheetrock System, pages 9 and 10, shall apply to this system.

For specifications covering PERF-A-TAPE Joint System, See Pages 14 and 15.

IV. ERECTION

A. Ceilings

SHEETROCK Wallboard for ceilings shall always be

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applied first. Standard framing practices for corner fastening shall be followed. Wallboard shall fit snugly at all angles.

1. Horizontal Application—Conventional single nail or screw application shall be used where the end of the board abuts a wall intersection. Where the long edges of the board are parallel with the intersection, the first nail or screw shall be nominally 7″ from the wall. Conventional nail or screw spacing shall be used in the remainder of the ceiling area.
2. Vertical Application—Conventional single nail or screw shall be used where the long edges of the board abut a wall intersection. Where the ends of the board are parallel to the intersection, the first nail or screw shall be nominally 7″ from the wall intersection. Conventional nail or screw spacing shall be used for the balance of the ceiling area.

B. Sidewalls

All wallboard shall be applied to maintain firm contact at the ceiling line and to provide support to ceiling boards previously installed. Along the horizontal angle, the first nail or screw shall be nominally 8″ from the ceiling intersection. At all vertical angles, omit only the corner fastening of the board that is first applied and overlapped in the angle. The overlapping board shall be nailed or screwed in the conventional manner. Conventional nail spacing should be used in the remainder of the sidewall area.

The use of double nailing in conjunction with the Floating Interior Angle System does not alter the nailing requirements for angles specified above.

ARCHITECT SPECIFICATIONS FOR PERF-A-TAPE JOINT SYSTEM PRODUCTS

NOTE: As technological advancements occur throughout the year, application usage and precautions should be observed as indicated on labels of each container.

I. SCOPE

Unless otherwise indicated, all walls, partitions and ceilings are included. Furnish all labor and material necessary to reinforce and conceal all joints between gypsum wallboard panels in accordance with specifications and drawings. (If DUR-A-BEAD* metal corner reinforcing is specified) furnish all labor and material necessary to properly conceal the metal flanges of DUR-A-BEAD. (If PERF-A-BEAD corner reinforcing is to be specified) furnish all labor, PERF-A-BEAD* Corner reinforcement and Compound required to finish all external vertical corners and other corners as may be shown on drawings.

(If PERF-A-TRIM is specified) furnish all labor and material to properly bond and conceal exposed flanges of PERF-A-TRIM as specified or shown on drawings.

II. GENERAL CONDITIONS

Heat and Ventilation—In cold weather the building shall be heated well in advance of and during the application of the Gypsum Wallboard to maintain a uniform temperature in the range of 55° F. to 70° F., and ventilation shall be provided to eliminate excessive moisture.

When required, heat is to be furnished by (Insert Contractor's Name Here). Drafts are to be avoided during application but adequate ventilation is to be provided when application is completed. In glazed buildings this shall be accomplished by keeping windows open approximately two inches top and bottom (or side pivoted windows approximately four inches) to provide air circulation. In enclosed areas or buildings lacking in natural ventilation, temporary circulators shall be used.

III. MATERIALS

GENERAL: All materials as specified above shall be the products of the United States Gypsum Company, delivered to the job in original unopened containers, stored in a place protected from exposure to the elements and from damage by tampering, and used in strict accordance with manufacturer's directions.

Reinforcing Tape: PERF-A-TAPE*

Compound: PERF-A-TAPE Joint Compound (or All Purpose Ready Mixed)—for embedding and first coat application, PERF-A-TAPE Topping Compound (or All Purpose Ready Mixed)—for fill and finishing.

IV. APPLICATION

PERF-A-TAPE Joint Compound and PERF-A-TAPE Topping Compound shall be mixed in accordance with manufacturer's recommendations. (PERF-A-TAPE All Purpose Ready Mixed Compound shall be used as it comes in original container.)

Using a suitable tool or machine, a thin uniform layer of PERF-A-TAPE Joint Compound (embedding type or Ready Mixed), approximately 3″ wide, shall be applied over the joint to be reinforced. The tape shall then be centered over the joint and seated into the compound, leaving sufficient compound under the tape to provide proper bond. Recommended procedure is to apply a skim coat of compound immediately after embedding tape. Excess compound shall be cleaned from the surface of the wallboard.

Wall and ceiling angles and inside vertical corner angles shall be similarly reinforced with the reinforcing tape folded to conform to the adjoining surfaces and to form a straight, true angle.

All joints shall be allowed to dry thoroughly (minimum of 24 hours) between each application of compound.

The tape shall be covered with topping (or ready mixed compound), spread evenly over and slightly beyond the tapered edge area of the board and feathered at the edges. After the previous coat is dry it shall be covered with a second coat of topping (or ready mixed compound) with a smooth uniform slight crown over the joint and the edge feathered slightly beyond the preceding coat. All dimples at nail heads shall receive three coats of joint compound, or topping (or All Purpose Ready Mixed Compound), applied as each coat is applied to the joints.

(If DUR-A-BEAD Corner reinforcing is used). Flanges of all DUR-A-BEAD metal corner reinforcing shall be concealed by at least two coats of compound. The first coat shall be PERF-A-TAPE Joint Compound (embedding type or ready mixed compound.) Second coat may be either PERF-A-TAPE Joint Compound or PERF-A-TAPE topping (or All Purpose Ready Mixed Compound). When completed, the compound shall extend approximately 8″ to 10″ on either side of the exposed metal nosing.

(If PERF-A-BEAD corner reinforcing is used.) PERF-A-BEAD shall be furnished, applied and concealed in accordance with the manufacturer's directions.

(If PERF-A-TRIM is used). PERF-A-TRIM shall be finished in accordance with the manufacturer's directions.

All coats shall be sanded as necessary after each application of joint compound or topping (or ready mixed compound) has dried. The final coat and subsequent sanding shall leave all gypsum wallboard and treated areas uniformly smooth and ready to receive decoration.

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PERF-A-TAPE* JOINT SYSTEM PRODUCTS

PRODUCT	DISTINGUISHING CHARACTERISTICS	FORM	USES AND LIMITATIONS	
PERF-A-TAPE Joint Compound—a specially designed dual-purpose compound for filling joints and embedding the joint reinforcing tape to produce smooth, unbroken wall surfaces and to conceal joints between panels of gypsum wallboards.	Easy mixing—tight bonding—durable—smooth working—edge and check crack resistant compound for concealing joints. Special formula minimizes paint discoloration and discoloration from vapor and gas burner gases in air.	Powder	For use on interior joints, corners, and nail heads in gypsum wallboard. May be applied by hand or with mechanical taping tools. Each joint compound application must be dry before next is applied. May also be used with PERF-A-TAPE in reinforcing cracks in plaster surfaces. Not designed to join wood or wood fibre products. Requires protection against rewetting.	
PERF-A-TAPE Topping Compound—smooth, fine texture compound for finishing and concealing joint treatments.	Easy Sanding—long working life—excellent "feathering" qualities. No "built-in" factors to contribute to paint discoloration or to contribute to discoloration from vapors or gases in air from gas burners. Excellent finish when dry for further decorative treatments.	Powder	For fine finishing of joints after reinforcing tape embedment, and for nailhead concealment. Each topping application must be dry before next is applied. Completed joint treatment must be thoroughly dry before proceeding with decoration. Do not use to embed tape or for first coat over metal corner beads.	
PERF-A-TAPE—All Purpose Ready Mixed Compound is the ideal material for the reinforcement and concealment of joints in gypsum wallboard construction as well as covering nail heads and forming interior and exterior angles.	Smooth working, strong—fine texture—easy to sand—edge and check crack resistant ready to use joint compound. Requires minimum sanding. Very satisfactory surface over which to apply further decorative treatments. Assures uniform compound mixture throughout job.	Ready to use.	For uniform joint results in interior gypsum wallboard installation. Excellent for embedding tape and smooth finished joints, and nail head spotting on gypsum wallboard surfaces. Excellent when used with PERF-A-TAPE in reinforcing cracks in interior plaster surfaces. Not intended for use on wood or wood fibre products. Protect container from freezing. Protect finished application against wetting. Allow to dry thoroughly before proceeding with decoration.	
PERF-A-TAPE Reinforcement—a specially designed strong thin, chamfered edge tape reinforcement.	Special cross-fibred paper, of great strength both with and across the grain of the paper—feathered thin at the edges—many small random perforations to allow rapid air-escape during embedding.	Rolls	For use with either PERF-A-TAPE Joint Compound or PERF-A-TAPE All Purpose Ready Mixed Compound. Outstanding performance when used with companion products for joint reinforcement on gypsum wallboards.	

SHEETROCK* BRAND ADHESIVE

DESCRIPTION

SHEETROCK Brand Adhesive is specially formulated to adhere SHEETROCK Gypsum Wallboard (Plain and/or Foil Back) to wood framing members *in conjunction with* supplemental nailing. This adhesive is of a rubber, resin type, plastic in nature and is resistant to moisture, vermin and heat.

Important Note: Complies with the tentative specifications of the Dry-Wall Adhesive Manufacturers Association.

FUNCTION AND UTILITY

SHEETROCK Brand Adhesive, when properly applied, provides the following added qualities not available with conventional single layer nail-on application:

Reduction of Nail Defects—Nails in surface reduced by 50%. Cushioning effect reduces nail head fracturing of face paper. Incidence of loose board minimized by added area of contact.

Bridges Minor Framing Irregularities

Reduces Impact Sound

LIMITATIONS OF USE

1. All surfaces coming in contact with the adhesive should be free of dirt, grease, oil or other foreign material.
2. The adhesive should be stored at approximately 70°F., for 24 hours prior to application to facilitate ease of flow.
3. Adequate ventilation should be provided.
4. Normal precautions (for a flammable material) should be employed regarding proximity to fire, sparks or smoking prior to evaporation of volatile material.
5. The adhesive should be kept in the original unopened container or enclosed in such a manner as to prevent evaporation of volatile materials.
6. Carbon tetrachloride or a petroleum solvent, such as naptha or white gasoline, should be used to remove excess adhesive or to clean tools.
7. No adhesive shall be applied more than 15 minutes in advance of installation of the gypsum wallboard.

SPECIFICATIONS

NOTE TO ARCHITECT—This system augments but does not replace back-blocking. Where adhesive, nail-on method of attachment is to be specified, include the following:

I. SCOPE

All framing members to which SHEETROCK is to be fastened shall receive a bead of adhesive. This excludes all members not used as a nailing base.

II. GENERAL CONDITIONS

Adequate ventilation shall be provided to allow escape of fumes emitted by volatile materials.

III. MATERIALS

Adhesive—shall be SHEETROCK Brand Adhesive.

IV. TOOLS shall be:

1. Drywall Adhesive Applicator—Model "A-3" and Alemite Loader Pump—Model 7197-L

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2. Ames Mastic Meter and Pump
3. Standard Caulking Gun for 1/10 gal. Cartridge Application.
4. Model "A-2" SHEETROCK Brand Adhesive Gun for ¼ gal. Cartridge.

V. ERECTION

A continuous bead of adhesive of sufficient size to completely cover the face of the nailing members when flattened to a thickness of 1/16″, shall be applied immediately prior to erection of the gypsum wallboard. No adhesive shall be applied more than 15 minutes prior to being covered with wallboard. Where two adjoining edges of the wallboard occur on one member, a serpentine bead of adhesive shall be applied in a manner so as to repeat itself every 8″.

Each panel of gypsum wallboard shall be completely nailed after it comes in contact with the adhesive. Space nails in accordance with the following schedule for non-fire rated construction.

Fastener Spacing (Adhesive Nail-on Application)

Frame Spacing	Ceilings		Partitions Load Bearing		Partitions Non-Load Bearing	
	Nail	USG Screw Type W	Nail	USG Screw Type W	Nail	DWS Type W Screw
16″ c to c	16″	16″	16″	24″	24″	24″
24″ c to c	12″	16″	12″	16″	16″	24″

Any excess adhesive on exposed surfaces shall be removed.

Adhesive is not required at inside corners, top or bottom plates, bracing or fire stops, and is not ordinarily used in closets.

SHEETROCK BRAND CONTACT BOND ADHESIVE

DESCRIPTION

SHEETROCK Brand Contact Bond Adhesive is a specially formulated product which instantly laminates SHEETROCK Gypsum Wallboard to gypsum backing boards. Because the bond is instantaneous when the two coated surfaces are in contact and impacted, no mechanical fastening is needed and any joint treatment desired may proceed at once. Only SHEETROCK Brand Contact Bond Adhesive is recommended by the United States Gypsum Company for laminating gypsum boards by the instant bond method. (Not recommended for use with vinyl-coated SHEETROCK Gypsum Wallboards.) It is tinted a light red color for easy identification. One gallon will cover approximately 125 to 150 square feet (coating two surfaces for one glue line).

FUNCTION AND UTILITY

1. Surfaces to be laminated must be thoroughly clean and dry before applying SHEETROCK Brand Contact Bond Adhesive *Both surfaces must be coated.*
2. For best results, SHEETROCK Brand Adhesive should be applied at temperatures of 50° to 80°F.
3. Using a paint roller, apply the Adhesive to the entire surface of the backing board or coreboard. Use a lamb's wool roller with phenolic core. Adhesive will cause rollers with other types of cores to disintegrate.
4. Apply Adhesive to the entire back surface of the face panels. Cover only as much area as can be laminated in one hour.
5. Before the coated surfaces are placed in contact, allow them to dry until they are only slightly tacky to the touch. This should take from 15 to 30 minutes at normal room temperature. Damp weather or cold air may require a longer waiting period.
6. Place the face panels over the baseboard in their *EXACT POSITION.* Joints of face layer and baseboard should be offset a minimum of 12 inches. Face panels cannot be shifted after contact, it is important to precut and prefit face panels prior to applying adhesive on either surface.
7. Impact face panel, including edge and end areas, with a rubber mallet to assure over-all bond.
8. For more detailed information on laminating procedures for various USG Gypsum Drywall Systems, call your nearest U.S.G. Sales Office or write Department 141, United States Gypsum Company, 300 W. Adams Street, Chicago 6, Illinois.

CAUTION: SHEETROCK Brand Contact Bond Adhesive and SHEETROCK Brand Solvent contains volatile materials and as a result are highly flammable. Observe and follow precautions as indicated on the label of each container.

N.Y.F.D.C. of A. No. 2927

WARRANTY: Distributor agrees to replace defective material or refund the purchase price thereof if written claim is made within one year from date of sale. Neither manufacturer nor distributor shall be liable for any loss, damage or injury, direct or consequential, arising from the handling or use of this material. This warranty is given in lieu of and excludes all other warranties, expressed or implied.

SHEETROCK BRAND CONTACT BOND SOLVENT

1. The primary use of SHEETROCK Brand Contact Bond Solvent is for cleaning or soaking rollers and brushes when not in use.
2. Use only SHEETROCK Brand Contact Bond Solvent for cleaning paint rollers or brushes. Turpentine, kerosene and other popular type solvents will not dissolve SHEETROCK Brand Contact Bond Adhesive.
3. On jobs requiring continued use of rollers, immerse them in SHEETROCK Brand Contact Bond Solvent overnight and over week-end in a tightly closed container.
4. Other solvents may not be compatible with SHEETROCK Brand Contact Bond Adhesive. If inter-mixed in any manner, harmful reduction in bond or complete bond failure can result.
5. SHEETROCK Brand Contact Bond Solvent should be used very sparingly as a thinner and only if evaporaton of the solvent in the Adhesive causes it to become too heavy for normal application.
6. On jobs requiring large amounts of SHEETROCK Brand Contact Bond Adhesive, recommended practice is to add fresh Adhesive to that remaining in the working container.

CAUTION: SHEETROCK Brand Contact Bond Adhesive and SHEETROCK Brand Solvent contains volatile materials and as a result are highly flammable. Observe and follow precautions as indicated on the label of each container.

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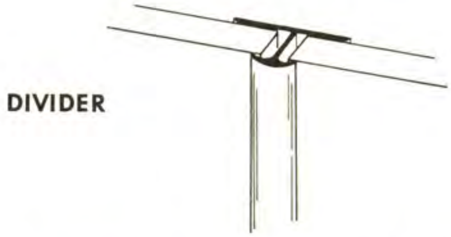
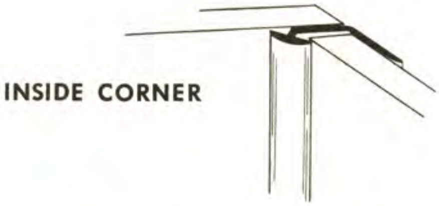
SHEETROCK MOULDINGS

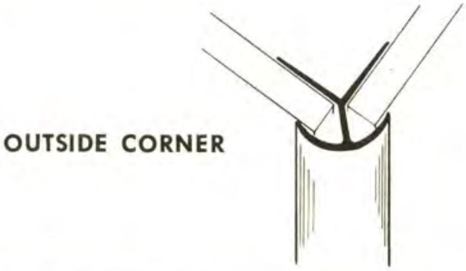
SHEETROCK Moldings are precision made in standard 8′ lengths for use with ⅜″ Simulated Woodgrained, Vinyl-Coated Simulated Woodgrained and Vinyl-Coated SHEETROCK wallboards with permanently bonded matching finishes.
Start installation of SHEETROCK and SHEETROCK Moldings from corner or door. Nail moldings to wood framing with flat head wire nail 8″ to 12″ apart. Cutting of the moldings is done with a hack saw.



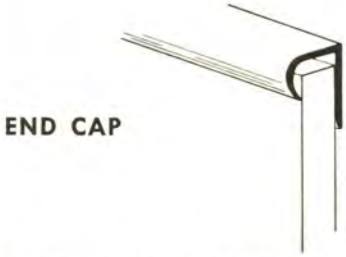
DIVIDER: Place divider on panel before positioning. Nail exposed side—Insert abutting panel.



INSIDE CORNER: Place first panel in position. Apply molding over first panel. Insert second panel.



OUTSIDE CORNER: Place molding over one panel at corner. Nail exposed side. Insert next corner panel.



NAIL END CAP in position. Apply panel by inserting into end cap. Shim panel at floor to insure snug fit in cap.

METAL ACCESSORIES FOR WALLBOARD APPLICATION

No. 100 PERF-A-BEAD—A metal corner reinforcement formed of galvanized steel with PERF-A-TAPE wings 1¼″ wide. PERF-A-BEAD is easily applied with PERF-A-TAPE Joint Compound and is designed to provide lasting protection in drywall construction.

DUR-A-BEAD—An excellent guard for external wallboard corners. Made of galvanized steel, DUR-A-BEAD combines lasting protection with ease of application. Easily nailed to framing through gypsum wallboard and concealed with PERF-A-TAPE Joint Compound to a smooth, finished corner. Available in a variety of flange widths for all job requirements.
No. 101—1″ x 1″
Econo No. 102—1″ x 1¼″
No. 103—1¼″ x 1¼″
No. 104—1⅛″ x 1⅛″
Econo Standard—15/16″ x 15/16″
Econo No. 104—1⅛″ x 1⅛″

No. 200-A USG* METAL TRIM—A strong, channel type steel casing that provides maximum protection and a neat finished edge to gypsum wallboard at window and door jambs, and at intersection where wallboard abuts other materials. Easily installed by nailing through the channel and wallboard into the framing or jamb. Joints do not have to be mitered but are simply butted together. PERF-A-TAPE Joint Compound is used to complete the installation. For use with ½″ and ⅝″ gypsum wallboard.

No. 200-B USG METAL TRIM—An angle edge trim whose finished appearance and application is similar to 200-A. By elimination of a back flange, application is simplified. For use with ½″ and ⅝″ gypsum wallboard.

No. 200-C USG METAL TRIM—Requires a slotted jamb for installation in most cases. By inserting the open "V" edge of the flange into the slot of the jamb, this trim is adjustable for use with ⅜″, ½″ and ⅝″ gypsum wallboard. Designed to provide neat, tight fitting joints without precision cutting.

PERF-A-TRIM*—A galvanized channel with PERF-A-TAPE flange attached. Designed for use as a casing around door and window openings and ceiling angles. Suitable for single or double layer gypsum wallboard construction. PERF-A-TAPE is embedded with PERF-A-TAPE Joint Compound to produce a flush edge reinforcement. Two sizes are available for different thicknesses of wallboard.
No. 300—⅜″ No. 301—½″

USG METAL TRIM—An economical metal channel which provides enduring edge protection. Ideal as trim around door and window openings and as molding at ceiling angles. No finishing compound is required. Available in two sizes for different thicknesses of wallboard.
No. 400—⅜″ No. 401—½″ No. 402—⅝″

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SEMI-SOLID
PARTITION—GENERAL INFORMATION

DESCRIPTION

The USG* Semi-Solid Gypsum Drywall Partition is a non-load bearing construction, 2¼″ thick, erected in place by laminating ⅝″ SHEETROCK Wallboard to both sides of 1″ x 8″ USG* Coreboard Strips. The Coreboard Strips are positioned vertically and spaced approximately 24″ c. to c. in the wall to provide an alternate solid and hollow feature. The wall assembly, when constructed with wood floor and ceiling runners, does not require supplemental framing under normal conditions.

FUNCTION AND UTILITY

The Semi-Solid Partition provides a low cost, functional and structurally sturdy assembly for use in single and multi-family residential construction. The assembly particularly lends itself to residential construction using trussed rafter roof framing, since all of the partitions can be erected without the interference of previously constructed load bearing walls.

NO PERMANENT FACE LAYER MECHANICAL FASTENERS—eliminates the need for treating nail-heads or screw-heads in the field of the board with joint compound.

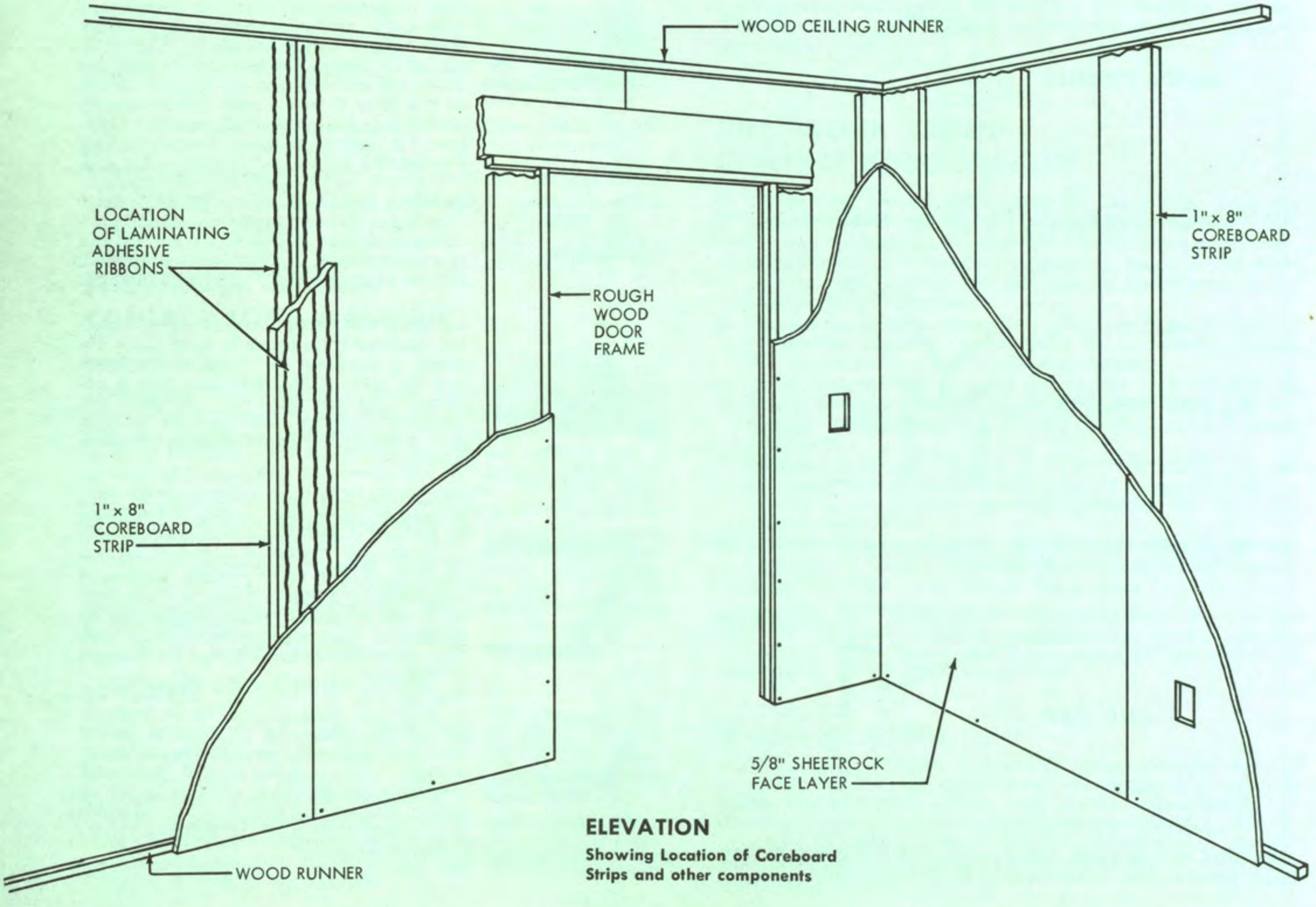
NO JOINT RIDGING—all face layer joints effectively backed.

FAST ERECTION—simplified layout and cutting of gypsum board components, combined with the elimination of framing, speeds up construction.

GREATER INCOMBUSTIBILITY—no framing members to support combustion, except for floor and ceiling runners.

LIMITATIONS OF USE

1. Non-Load bearing
2. Height limited to 10′-0″.
3. Partition is not designed for use as a party wall construction *between* occupancies in multi-family dwellings. The USG Double-Solid Gypsum Drywall Partition is recommended for these locations.
4. No more than a 6 inch void shall exist between the ends of the coreboard strips, placed vertically in the partition, and the floor and/or ceiling runner.



ELEVATION

Showing Location of Coreboard Strips and other components

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SPECIFICATIONS—SEMI-SOLID PARTITION

I. SCOPE

Furnish all labor, materials and equipment necessary to construct all USG Semi-Solid Gypsum Drywall Partitions, with related components and accessories, in accordance with the specifications and drawings.

II. GENERAL CONDITIONS

In cold weather and during the period of laminating the gypsum boards and finishing the joints, temperatures within the building shall be maintained uniformly within the range of 45° to 70° F. Adequate ventilation shall also be provided to eliminate excessive moisture within the building during this same period.

All materials, as specified below, shall be delivered to the job in their original, unopened containers or bundles; stored in a place providing protection from damage and exposure to the elements.

The installation and application of all materials shall be in accordance with the latest printed directions or specifications of UNITED STATES GYPSUM.

III. MATERIALS

All gypsum board products; adhesive and accessories shall be as manufactured by United States Gypsum, unless otherwise indicated.

A. Gypsum Board

1. Coreboard—1" x 24" USG Coreboard, Prescored 8" o.c., snapped and separated to form 1" x 8" coreboard strips, in stock lengths.
2. Face Layers—⅝" Tapered Edge SHEETROCK Wallboard or SHEETROCK FIRECODE, 48" wide, in lengths as required.

B. Wood Components

Floor and ceiling runners, rough terminal member and rough door frames shall be wood stock of suitable grade, straight, true and free of knots, which provides a 1" minimum width dimension.

C. Adhesive

PERF-A-TAPE Joint Compound (embedding type) mixed in accordance with manufacturers' directions using mechanical mixing. SHEETROCK Brand Contact Bond Adhesive used in accordance with manufacturer's directions.

D. Fasteners

1¼" USG Drywall Screw—Type W. Nails shall conform with "Recommended Performance Standards for Nails for Gypsum Wallboard" adopted by the Gypsum Association and the Gypsum Drywall Contractors International.

E. Accessories

USG Metal Trim, DUR-A-BEAD or PERF-A-BEAD Corner Reinforcement and PERF-A-TAPE Joint Treatment, or other accessories as required to complete partition construction.

IV. ERECTION AND LAMINATION

Floor and ceiling runners shall be accurately aligned, plumbed, and securely fastened by nailing or other suitable anchorage at 16" intervals to the floor and ceiling constructions.

(NOTE: Spacing of attachment for ceiling runners may be increased to 24" c. to c. maximum, where framing occurs at this spacing).

Face boards of appropriate length shall first be positioned, with long dimension vertical, on one side of the floor and ceiling runner.

Face boards shall be permanently fastened to the wood runners by nailing at a minimum of three points along top and bottom ends. Vertical edges shall not be located within 8" of corners of doors or other openings.

Coreboard strips, 1" x 8", of appropriate length to fit with ease between floor and ceiling runner, are centered over the vertical joints, and at midpoint between vertical joints—24" c. to c., and laminated to the back side of the face boards.

PERF-A-TAPE Joint Compound (Embedding Type) adhesive for the lamination of face boards to coreboard shall be located in the form of heavy ribbons (approximately ½" at base and ⅝" high) on either the coreboard strips or the back side of the face boards. Adhesive ribbons shall occur 2" c. to c. and 1" away from the edge of the coreboard strip.

See pages 14 and 15 for SHEETROCK Brand Contact Bond Adhesive specifications.

Coreboard strips, minimum 1" x 8", shall be placed completely around all door openings, at partition intersections and corners.

Rough door frames may be installed as the partition is erected or constructed in accordance with conventional framing practices prior to the installation of gypsum board. Rough door frame jambs and partition terminal members shall be securely toenailed to floor and ceiling runners.

After coreboard strips are placed, face boards are positioned on the opposite side of the floor and ceiling runners, laminated to coreboard strips, and nailed at top and bottom ends as prescribed.

Face boards shall be nailed to all wood component members, except floor and ceiling runners, at 8" c. to c. 1¼" USG Drywall Screws—Type W spaced 12" c. to c. may be used in place of nails.

Temporary nailing of the face boards at the vertical joints shall be required until laminating adhesive dries (approx. 24 hours). Drive scaffold nails at 45° angle through scrap pieces of gypsum wallboard directly into the vertical joint at third points. Nails shall be removed prior to treating joints.

All face board joints and internal angles formed by the intersection of walls and ceilings, where required, shall be treated with PERF-A-TAPE Joint System. Corner reinforcement shall be installed and finished in accordance with manufacturer's directions. Metal trim shall be used at intersections with masonry walls and ceilings of other materials, as required.

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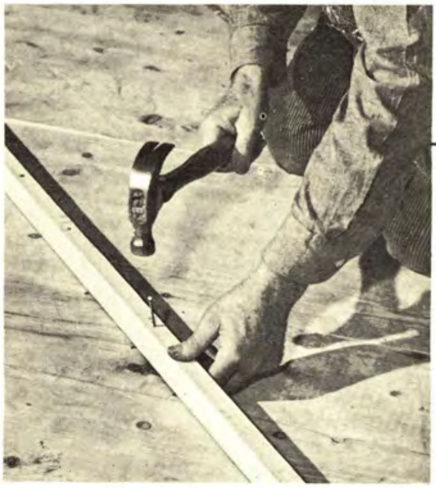
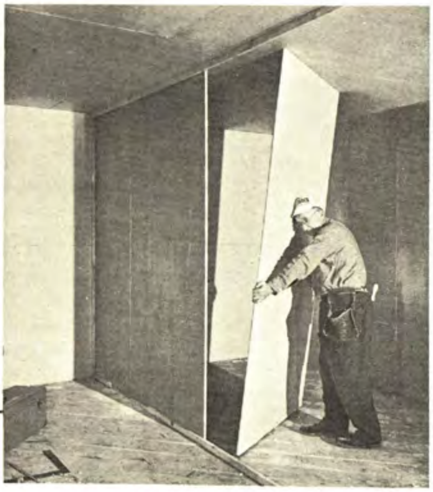
*T. M. Reg. U. S. Pat. Off.

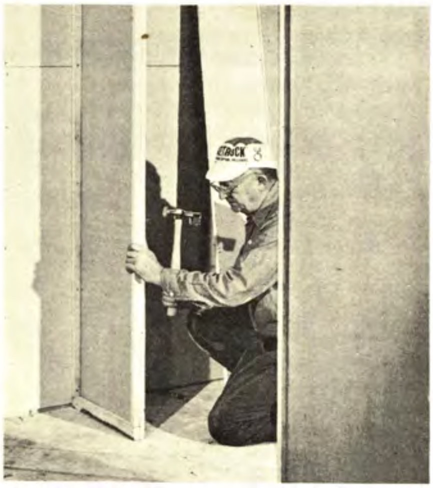
INSTALLATION



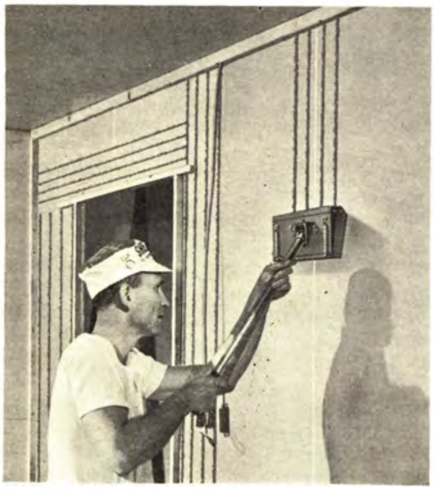
Setting
Wood Runners



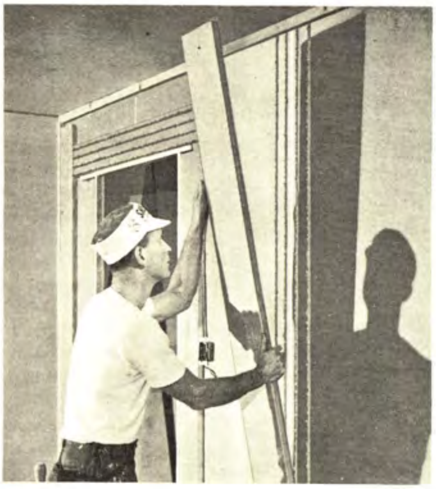
Applying First
Face Layer



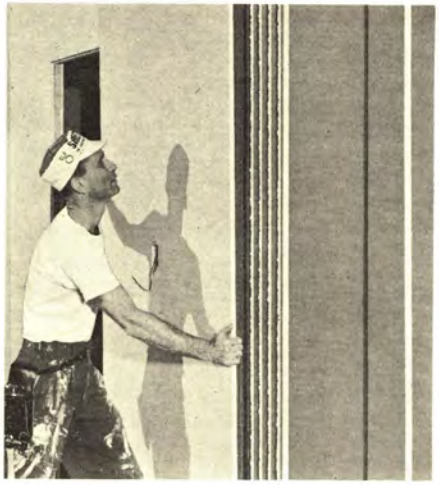
Installing
Rough Door Frame



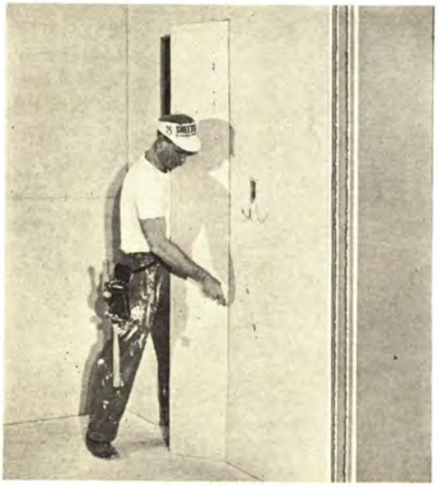
Making
Adhesive Application



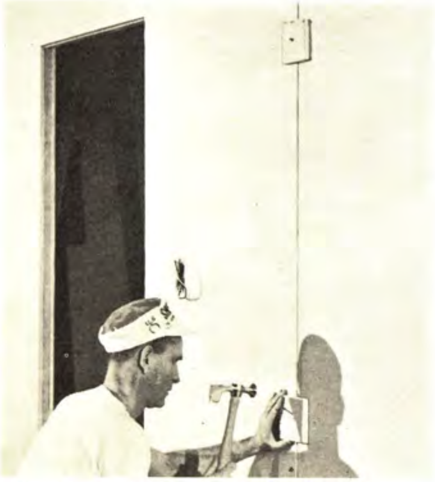
Setting
Coreboard Strips



Application of
Second Face Layer



Making Cut-Outs
For Openings



Aligning Face
Layer Joints

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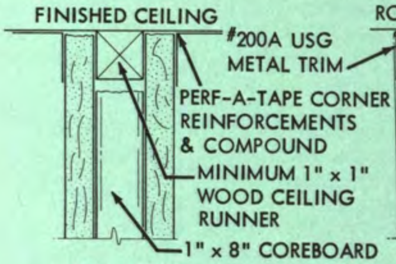
*T. M. Reg. U. S. Pat. Off.

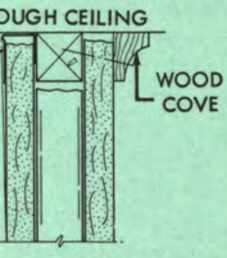
INSTALLATION DETAILS

CEILING AND BASE

Scale: 3″ = 1′-0″

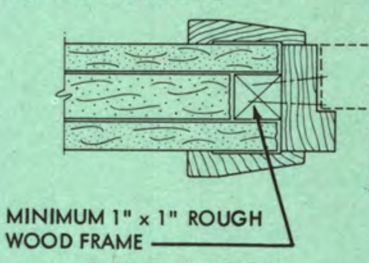

FINISHED CEILING
*200A USG METAL TRIM
PERF-A-TAPE CORNER REINFORCEMENTS & COMPOUND
MINIMUM 1" x 1" WOOD CEILING RUNNER
1" x 8" COREBOARD

CEILING



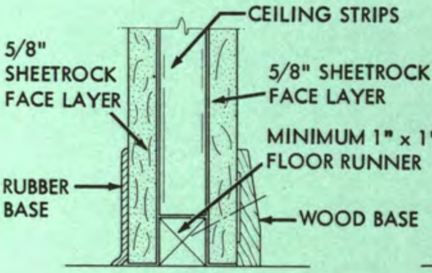
CEILING

DOOR FRAMES

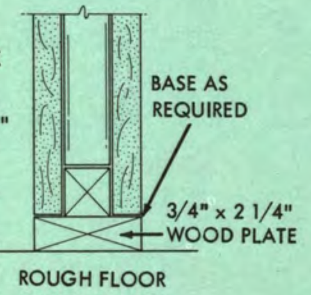

PACKAGED UNIT DOOR, FRAME & TRIM
MINIMUM 1" x 1" ROUGH WOOD FRAME

NOTE:
DETAIL INDICATES ROUGH WOOD BUCK INSTALLATION AS PARTITION ERECTED.

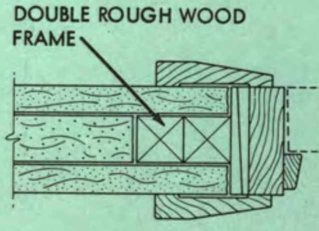
DOOR FRAME


CEILING STRIPS
5/8" SHEETROCK FACE LAYER
5/8" SHEETROCK FACE LAYER
MINIMUM 1" x 1" FLOOR RUNNER
RUBBER BASE
WOOD BASE
FINISHED FLOOR

BASE



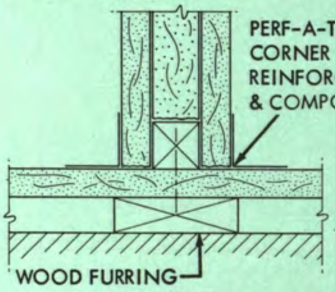
ALT. BASE



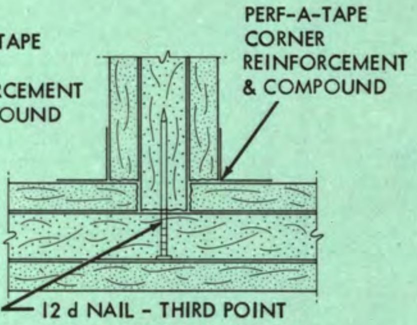
NOTE:
ALTERNATE DETAIL INDICATES ROUGH WOOD BUCK INSTALLATION PRIOR TO PARTITION ERECTION.

ALT. DOOR FRAME

INTERSECTIONS

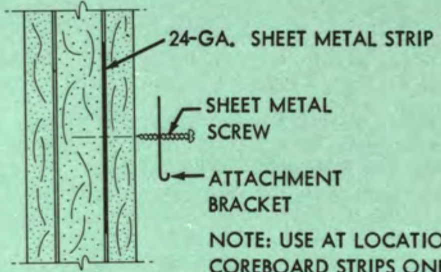


FURRED EXTERIOR WALL INTERSECTION



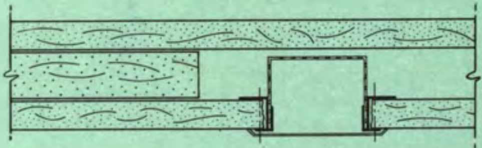
PARTITION "T" INTERSECTION

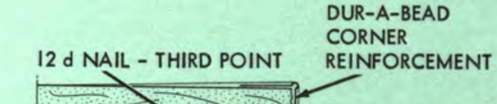
MISCELLANEOUS

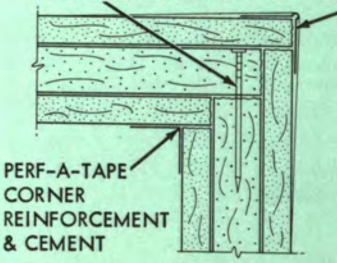


NOTE: USE AT LOCATION OF COREBOARD STRIPS ONLY.

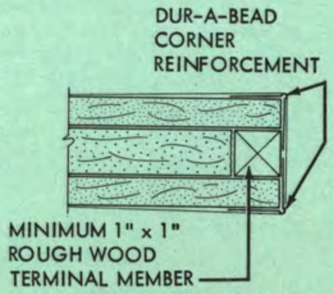
LIGHT FIXTURE ATTACHMENT



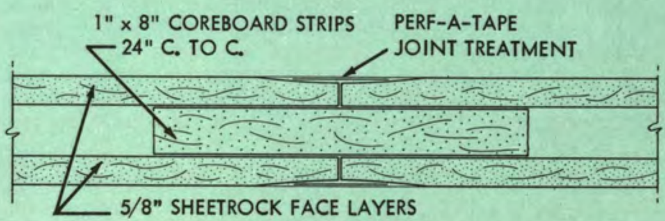



12 d NAIL - THIRD POINT
DUR-A-BEAD CORNER REINFORCEMENT
PERF-A-TAPE CORNER REINFORCEMENT & CEMENT

CORNER INTERSECTION


DUR-A-BEAD CORNER REINFORCEMENT
MINIMUM 1" x 1" ROUGH WOOD TERMINAL MEMBER

PARTITION TERMINAL


1" x 8" COREBOARD STRIPS 24" C. TO C.
PERF-A-TAPE JOINT TREATMENT
5/8" SHEETROCK FACE LAYERS

JOINT DETAIL

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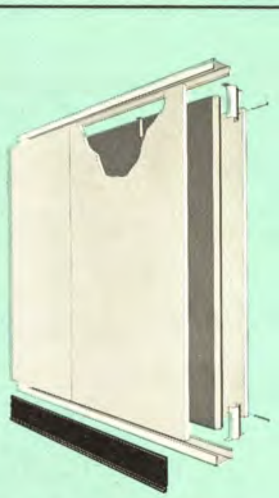
*T. M. Reg. U. S. Pat. Off.

2-INCH SOLID PARTITION SYSTEM—GENERAL INFORMATION

- **1½- and 2-hour fire rating**
- **Space saving—nominal 2 inches thick**
- **Average 36 db sound transmission loss rating**
- **12 feet maximum height**



DESCRIPTION

The USG* 2″ Solid Gypsum Drywall Partition System is a non-load bearing, incombustible (with metal components) partition constructed in place by laminating face layers of ½″ gypsum board, to both sides of a 1″-thick solid gypsum coreboard. The face layers are laminated to the coreboard by using a multi-purpose cement (normally required for joint treatment) as the adhesive. The basic construction permits the use of either wood or metal components, depending upon code restrictions and insurance requirements.

Gypsum Board: The coreboard is a 1″-thick by 24″-wide mill-fabricated board of standard lengths composed of a fireproof gypsum core encased in strong gray liner paper on both sides and long edges. Integrally formed "V" edges facilitate accurate alignment during erection.

The face layers consist of regular and/or specialty gypsum wallboard materials, minimum ½″ thick.

Accessories: Metal accessories include floor and ceiling runners, a flush and recessed metal base of special design, and a standard reveal type metal base. Various trims are available and may be used in conjunction with this assembly as distinctive design features or job conditions may require.

Other accessories such as joint reinforcing tape and compound and corner reinforcement, are generally required to complete all partition installations.

FUNCTION AND UTILITY

Fire Resistance—The 2-inch Solid Partition consists entirely of incombustible materials, except where floor and ceiling runners of wood are used. Fire endurance and hose stream ratings have been established for the following two assemblies by a nationally-recognized fire-testing laboratory†:

1½-Hour Fire Rating—Untreated wood floor and ceiling runners; 1″ USG "V" T&G Gypsum Coreboard with ½″ regular SHEETROCK Gypsum Wallboard face layer applied vertically each side, with joints staggered on opposite sides and not located directly opposite coreboard joints; face layers laminated with PERF-A-TAPE* Joint Compound (embedding type). Face layer joints treated with PERF-A-TAPE Joint System.

2-Hour Fire Rating—Metal floor and ceiling runners; 1″ USG "V" T&G Gypsum Coreboard with ½″ SHEETROCK FIRECODE face layer applied vertically each side, with joints staggered on opposite sides and not located directly opposite coreboard joints; face layers laminated with PERF-A-TAPE Joint Compound (embedding type). Face layer joints treated with PERF-A-TAPE Joint System.

Adaptability and Versatility—The 2-inch Solid Partition can be used in virtually every type of new construction: commercial, institutional, industrial, residential, etc.

It is excellent for permanent space subdivision in the remodeling and modernization of existing buildings. During remodeling, because of the simplicity and the speed of erecting this system, normal work can proceed with a minimum of disturbance. Partitions are completely job-erected, making layout changes less costly.

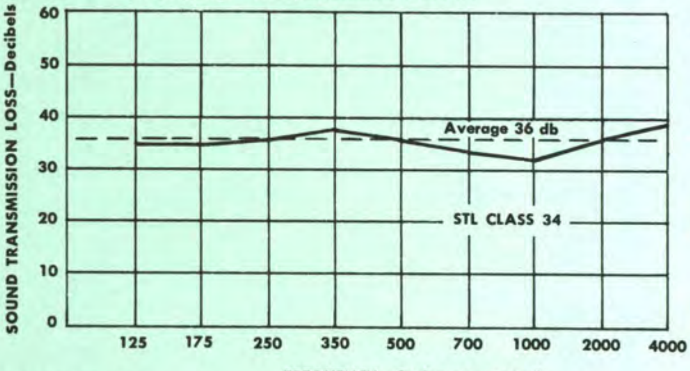
This partition can be constructed in double partition form to accommodate mechanical installations and provide greater resistance to sound transmission (see Double Solid Partition).

Partition facings serve as a base for any decorative treatment, such as paint, wallpaper, fabrics and plastic films.

Fixtures—The 2-inch Solid Partition is structurally sufficient to support light- and heavy-duty fixtures such as lavatories, kitchen and bathroom cabinets, etc. The core panel can be easily routed, cut, or panels may be spaced apart to provide raceways for electrical wiring or conduit installations.

Economy—The 2-inch Solid Partition is easily installed, and can be erected faster than most other types of partitions. Utilizes low-cost materials and a minimum number of components. In addition, reduced thickness over conventional partition systems saves costly floor space.

Sound Transmission—The basic partition has an average sound transmission loss rating of 36 db and sound transmission loss class of 34 based on tests conducted by a nationally-recognized sound-testing laboratory†. The test results are graphically defined below.



LIMITATIONS

1. Non-load-bearing.

2. Limiting height: (Based on partitions with complete perimeter restraint and no openings. Where openings occur in short runs, consider limiting height as that corresponding to "over 18 ft." width between restraints.)

Width between restraints	2″ Solid Partition	2¼″ Solid Partition††
Up to 12′	12′	14′
12′ to 18′	11′	13′
Over 18′	10′	12′

††(When ⅝″ SHEETROCK Wallboard used as face layers.)

3. Partition should not be used where exposed to abnormal moisture or excessively high humidity.

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†*Detailed test data is available from United States Gypsum upon request.*

SPECIFICATIONS

1. SCOPE

Furnish all labor, materials and equipment necessary to construct all solid gypsum board partitions, with related metal components and accessories, as required, in accordance with the specifications and drawings.

2. GENERAL CONDITIONS

In cold weather and during the period of laminating the gypsum boards and finishing the joints, temperatures within the building shall be maintained uniformly within the range of 45° to 70°F. Adequate ventilation shall also be provided to eliminate excessive moisture within the building during this same period.

All materials, as specified below, shall be delivered to the job in their original, unopened containers or bundles; stored in a place providing protection from damage and exposure to the elements.

The installation and application of all materials shall be in accordance with the latest printed directions or specifications of UNITED STATES GYPSUM.

3. MATERIALS

All gypsum board products, joint treatment materials, corner bead, metal trim and accessories shall be as manufactured by United States Gypsum, unless otherwise indicated.

A. Coreboard—1″ thick, 24″ wide, USG "V" T&G edge Gypsum Coreboard, lengths as required.

B. Face Boards—½″ thick, 48″ wide, Tapered Edge SHEETROCK Wallboard, and/or SHEETROCK FIRECODE, as required.

C. Laminating Adhesive—PERF-A-TAPE Joint Compound (embedding type).

D. Joint Treatment—PERF-A-TAPE Joint System.

E. Corner Bead—DUR-A-BEAD, PERF-A-BEAD.

F. Metal Trim—#401, #402 Metal Trim, #200A, #200B Metal Trim.

G. Metal Accessories—DWR-218 Runner, Core Spacer Clip, Recessed Base, Metal Base, Metal Base Splice Plate, Flush Base Trim, and 1″ x 1⅜″ 22 Gauge Metal Angle Runners.

4. ERECTION & LAMINATION

Floor and ceiling runner tracks shall be accurately aligned and securely attached with suitable fasteners to floor and ceiling constructions at 24″ centers, in accordance with the approved partition layout or the drawings. (Note to Architect: Spacing of attachment for ceiling runner may be increased to 32″ c.c., maximum, where the runner track is to be attached to flat concrete slabs or nailed to wood framing or blocking above.)

Coreboard shall be cut accurately to fit in floor and ceiling runners, and installed vertically. A core spacer clip shall be inserted between the flanges of both the floor and ceiling runner tracks and shall engage the edge of the coreboard at each location. Clips shall then be nailed to each coreboard before successive coreboard panels are installed. Where partitions intersect, coreboard panels shall be nailed together with 10d nails spaced 24″ o.c. vertically.

All metal door and window (see Related Inclusions) frames shall be spot grouted at the location of core centering clips, after coreboard is installed.

Face boards shall be cut to the proper size for the full floor-to-ceiling dimension. Laminating adhesive, mixed in strict accordance with the directions of the manufacturer, shall be applied to the back of face boards in the prescribed manner. Face boards shall then be laminated to coreboard using moderate pressure to insure adequate bond. Vertical abutting joints in the face board shall be offset from those of the coreboard by at least three inches. At third points along vertical joints, temporary nails shall be driven at a 45° angle through scrap blocks of gypsum board directly into the joint to insure adequate joint alignment.

All face board joints and internal angles formed by the intersections of walls and ceilings, where required, shall be treated with joint reinforcing tape and compound. Metal trim shall be used at the ends of face boards at their intersection with masonry walls and finished ceilings, as required.

Work done by this contractor shall be coordinated properly with that to be done by other trades. Coreboards and face boards shall be cut neatly to fit around all outlets and switch boxes. Suitable fastener anchorage shall be provided as required for the attachment of shelves and cabinets.

5. COMPLETION

This contractor shall be responsible for the removal of all of his materials and equipment from the job after completion of his work and the finished partition shall be left ready to receive decoration.

RELATED INCLUSIONS

Door and Window Frames—*Under the appropriate section of the specifications indicate that metal door and borrow light frames shall be formed of not less than 18-gauge steel, shop primed. Anchorage to the floor shall be by two power activated anchors, or equivalent attachment, through a clip, minimum 14-gauge steel, at each jamb. Clips shall be shop-welded to trim flanges. For best results, anchor inserts (core centering clips) of minimum 18-gauge steel, shall be shop-welded in each jamb and head in accordance with details on page 25.*

Door frame struts, when required, shall be 1″ x ¼″ hot rolled steel bar stock.

In construction where struts are not used, temporary bracing shall be used to level and plumb frame until partition is erected.

Where wood door or borrow light frames are required, the nominal 1″ x 1″ wood runner detailed for floor and ceiling runners shall be used for the rough buck. In the case of door frames, the jamb section of the rough buck may serve as a strut and should extend from floor to ceiling and be securely toe-nailed to runners.

Electrical Installation

The depth of electrical boxes shall not exceed 1½″, and should be so noted under the appropriate section of the specifications.

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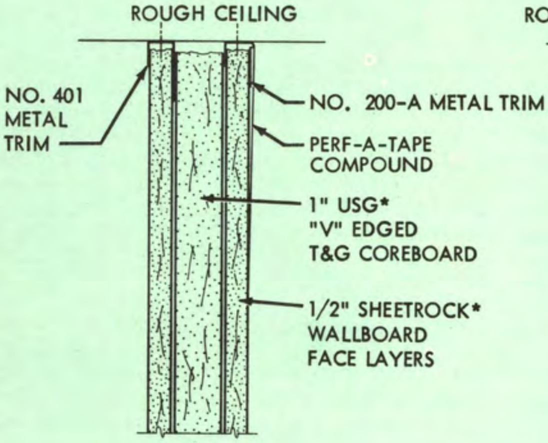
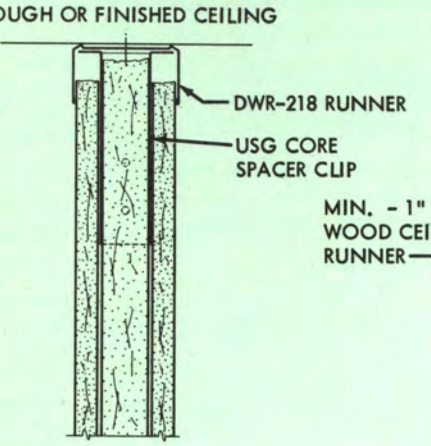
*T. M. Reg. U. S. Pat. Off.

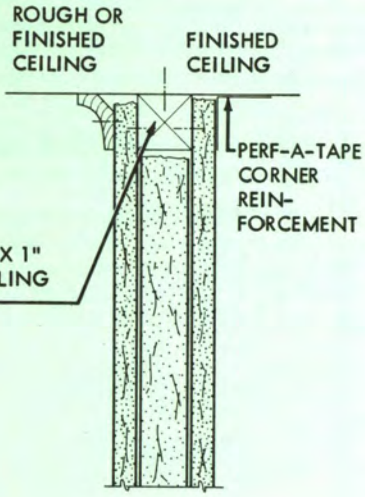
2-INCH SOLID PARTITION SYSTEM—ARCHITECTURAL DETAILS

CEILING ATTACHMENTS

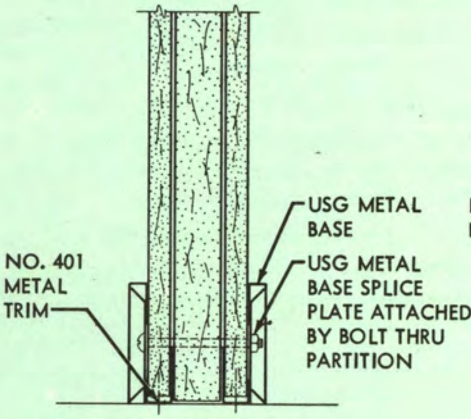
Scale: 3″ = 1′-0″



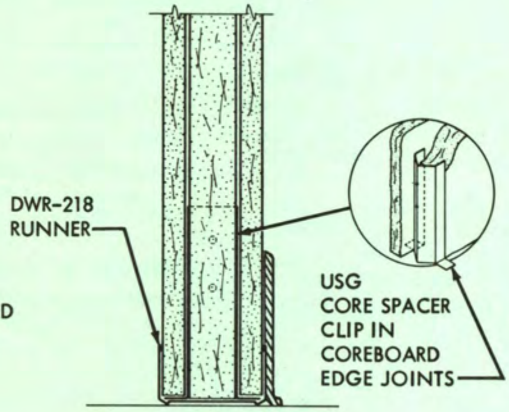



ROUGH OR FINISHED CEILING
FINISHED CEILING
PERF-A-TAPE CORNER REIN-FORCEMENT
MIN. - 1" X 1" WOOD CEILING RUNNER

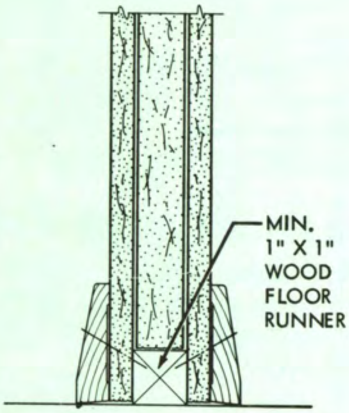
FLOOR ATTACHMENT & BASE



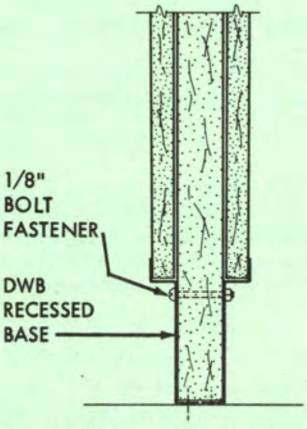
REVEAL METAL BASE



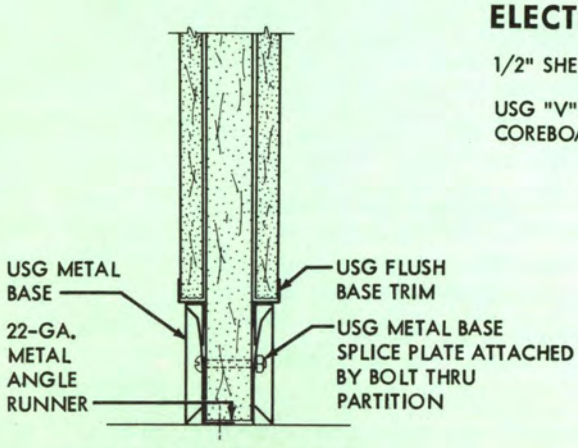
EXPOSED RUNNER RUBBER OR VINYL BASE



WOOD BASE

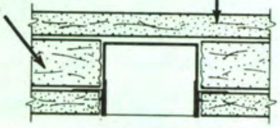


RECESSED METAL BASE

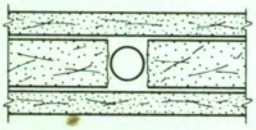

USG METAL BASE
22-GA. METAL ANGLE RUNNER
USG FLUSH BASE TRIM
USG METAL BASE SPLICE PLATE ATTACHED BY BOLT THRU PARTITION

FLUSH METAL BASE

ELECTRICAL SERVICE



OUTLET BOX

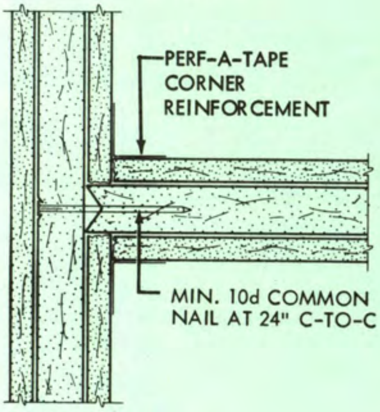


RIGID CONDUIT

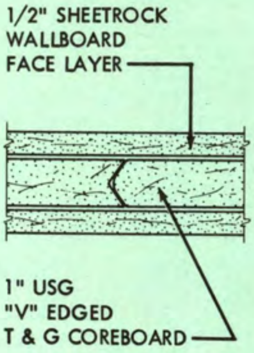
*T. M. Reg. U. S. Pat. Off.

WALL PLAN SECTIONS

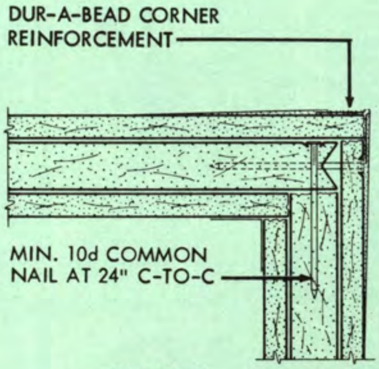
Scale: 3" = 1'-0"


PERF-A-TAPE CORNER REINFORCEMENT
MIN. 10d COMMON NAIL AT 24" C-TO-C

PARTITION INTERSECTION


1/2" SHEETROCK WALLBOARD FACE LAYER
1" USG "V" EDGED T & G COREBOARD

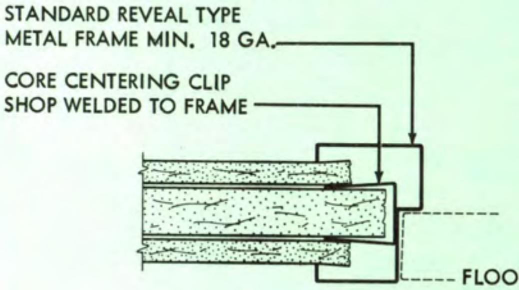
COREBOARD EDGE JOINT


DUR-A-BEAD CORNER REINFORCEMENT
MIN. 10d COMMON NAIL AT 24" C-TO-C

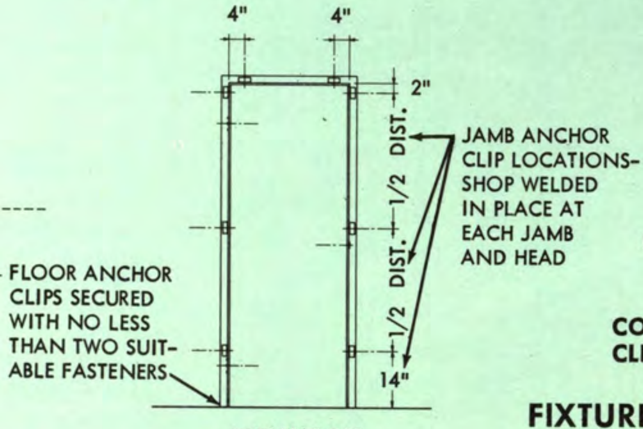
CORNER

METAL DOOR FRAME

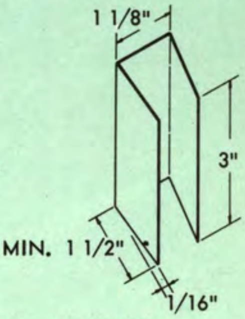
Scale: 3" = 1'-0"


STANDARD REVEAL TYPE METAL FRAME MIN. 18 GA.
CORE CENTERING CLIP SHOP WELDED TO FRAME

JAMB

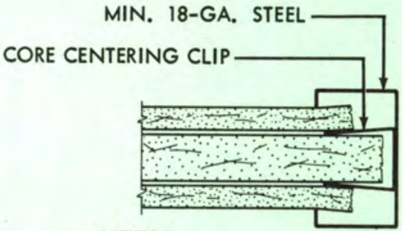

4"
4"
2"
DIST.
1/2
DIST.
1/2
14"
JAMB ANCHOR CLIP LOCATIONS- SHOP WELDED IN PLACE AT EACH JAMB AND HEAD
FLOOR ANCHOR CLIPS SECURED WITH NO LESS THAN TWO SUIT- ABLE FASTENERS

ELEVATION
(CROSS SECTION THRU FRAME)

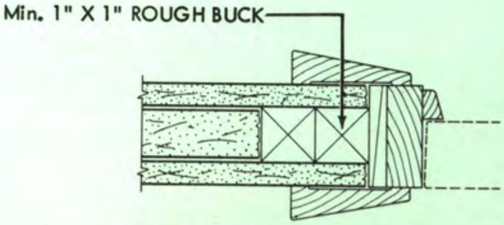


CORE CENTERING CLIP (18 GA. MIN.)

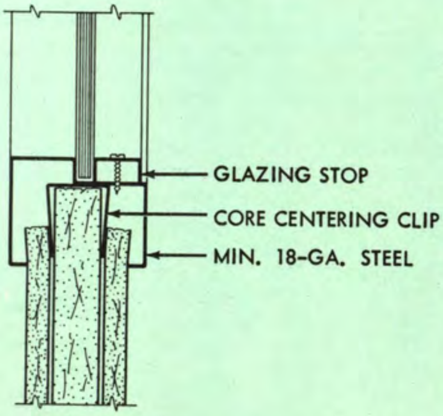
MISCELLANEOUS



METAL PARTITION TERMINAL

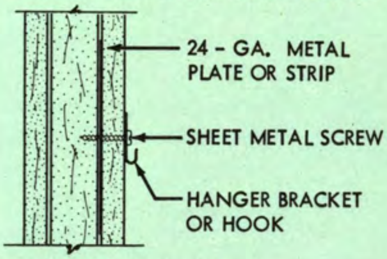


WOOD DOOR FRAME

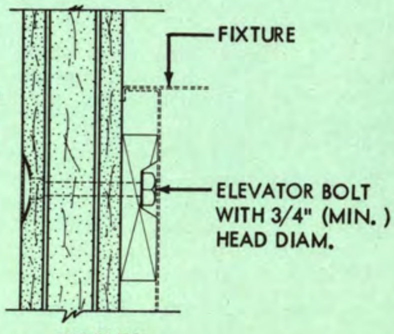


METAL BORROW LIGHT FRAME

FIXTURE ATTACHMENT



LIGHT



HEAVY

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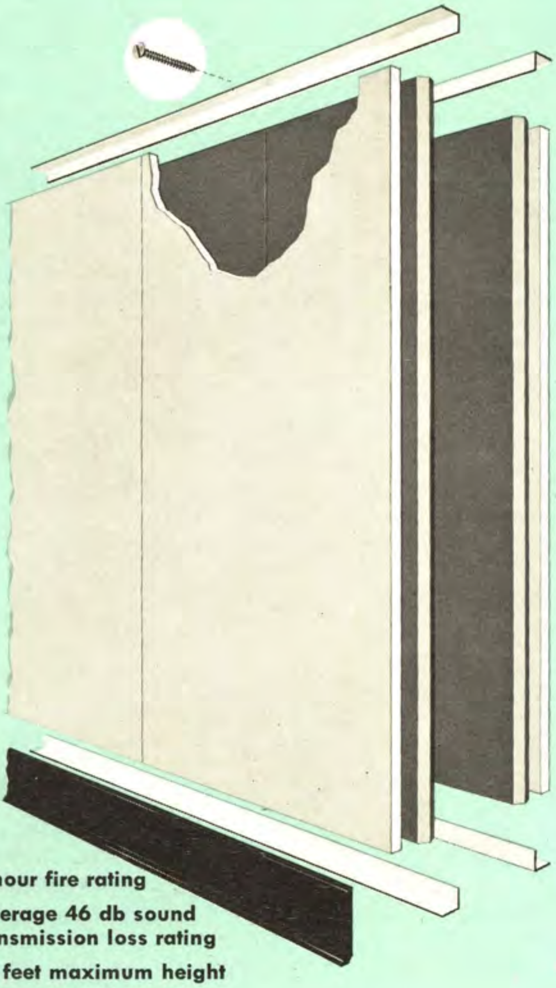
*T. M. Reg. U. S. Pat. Off.

DOUBLE SOLID PARTITION SYSTEM—GENERAL INFORMATION



- **2-hour fire rating**
- **Average 46 db sound transmission loss rating**
- **10 feet maximum height**
- **Lightweight—12.5 lbs. per square foot**

DESCRIPTION

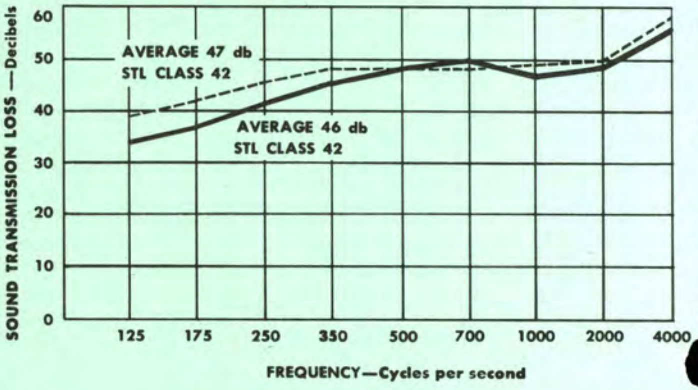
The USG Double Solid Gypsum Drywall Partition assembly consists essentially of the same components required for the USG 2" Solid Gypsum Drywall construction. It differs in the use of a double row of 1" gypsum coreboard, spaced a specified distance apart, with gypsum wallboard face layers laminated only to the outside surface of each row of coreboard. This versatile assembly is designed for use in conjunction with the 2" Solid Partition, and is recommended for party or corridor walls where greater sound transmission loss is a design requirement; where greater core widths are needed for plumbing enclosures and other mechanical installations; and where building codes call for greater fire resistance.

FUNCTION AND UTILITY

Fire Resistance—The Double Solid Partition consists entirely of incombustible materials, except where floor and ceiling runners of wood are used. A fire endurance and hose stream rating for the assembly has been established by a nationally-recognized laboratory†.

2-Hour Fire Rating—Double row of 1" USG "V" T&G Gypsum Coreboards spaced a minimum of 1⅛" apart; face layers of ½" Regular SHEETROCK Wallboard applied vertically with joints offset from coreboard joints and laminated to each outside surface of coreboard with PERF-A-TAPE Joint Compound (embedding type). Face layer joints treated with PERF-A-TAPE Joint System.

Sound Transmission Loss—The Double Solid Partition constructed with a 1" air space between coreboards has an average sound transmission loss rating of 46 db and a sound transmission loss class of 42 based on tests conducted by a nationally recognized sound testing laboratory. The sound transmission loss class is appreciably increased, to 46, by providing an air space of 3" between coreboards and replacing the ½" SHEETROCK face layer on one side of the partition with ⅝" SHEETROCK Wallboard. The test results are graphically defined below.



Rated Assemblies—Partition A—Double row 1" "V" T&G Gypsum Coreboards 1" apart; ½" SHEETROCK face layers both sides.

—Partition B—Double row 1" "V" T&G Gypsum Coreboards 3" apart; ½" SHEETROCK face layer one side; ⅝" SHEETROCK face layer other side.

Adaptability and Versatility—May be used for party and corridor walls in apartments, office buildings, schools, motels, dormitories, etc.; for pipe chase enclosures in virtually all types of building construction. Satisfies most design and job conditions. Component materials readily adapt to any module or dimension.

Provides speed of erection and installation, without any undue amount of clutter or mess.

Light Weight—The completed partition weighs approximately 12.5 lbs. per square foot—appreciably less than masonry partitions of the same thickness.

Economy—Low cost and simple component materials, speed of erection, ease and flexibility in providing for mechanical installations result in extremely favorable cost factors. The low weight of the partition may result in structural design savings.

LIMITATIONS

1. Non-load-bearing.
2. Allowable maximum height:

Width between restraint	Max. ceiling height
Up to 10′	10′—0″
10′ to 14′	9′—0″
Over 14′	8′—0″

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*T.M. Reg. U.S. Pat. Off.

†*Detailed test data is available from United States Gypsum upon request.*

SPECIFICATIONS / INSTALLATION

(The sections covering *Scope, General Conditions, Materials and Completion* under specifications for the USG 2-Inch Solid Gypsum Drywall Partition are the same for the USG Double Solid Gypsum Drywall Partition.)

ERECTION & LAMINATION

Floor and ceiling runners shall be accurately aligned and securely attached with suitable fasteners at 24″ centers to floor and ceiling constructions. The shape, size and gauge of the runners shall be determined by the intended use of the partition, i.e., party or corridor walls, or pipe chase enclosures, and shall be as detailed in the drawings. Runners shall be so shaped or spaced to provide a minimum of 1⅛″ space between 1″ coreboards.

All metal door frames (See Related Inclusions) shall be located and installed prior to the installation of coreboard. The installation of metal borrow light frames shall be installed in accordance with drawing layout as coreboard erection proceeds.

The installation of coreboard shall begin at the door frame by engaging the vertical edge in the centering clips in each jamb. Place cut-to-fit coreboard over metal frame header by engaging edge in centering clips and attaching to ceiling runners with 1¼″ USG Drywall Screws—Type S at 24″ centers.

Coreboard shall then be accurately cut to fit between floor and ceiling, positioned vertically, and fastened to the vertical flanges of both floor and ceiling runners with sheet metal screws (24″ c. to c.) through pre-drilled holes.

(To complete specification for the Double Solid Partition refer to Specifications—2″ Solid Partition, page 9, which covers cutting, adhesive application and erection of face boards; and coordination of work with other trades.)

RELATED INCLUSIONS

Reference to related inclusions following the Specifications —2″ Solid Partition shall also apply to the Double Solid Partition with the following exceptions:

1. For the best results, metal frame core centering clips shall be of minimum 18-gauge steel and shall conform to the details of location and type that appear on page 29.

2. The use of metal door frames with structural bar (1″ x ¼″ hot rolled steel) ceiling struts, extending from minimum 16″ below head of frame in each jamb to ceiling, are recommended.

3. Electrical convenience outlet and switch boxes of up to 2½″ in depth may be used with this partition construction.

Floor runners being anchored in place.

Coreboard is attached to runners appropriately spaced for mechanical installation, when required.

Coreboard panels are screw-anchored to runners.

Face layers of gypsum wallboard are adhesively applied to coreboard.

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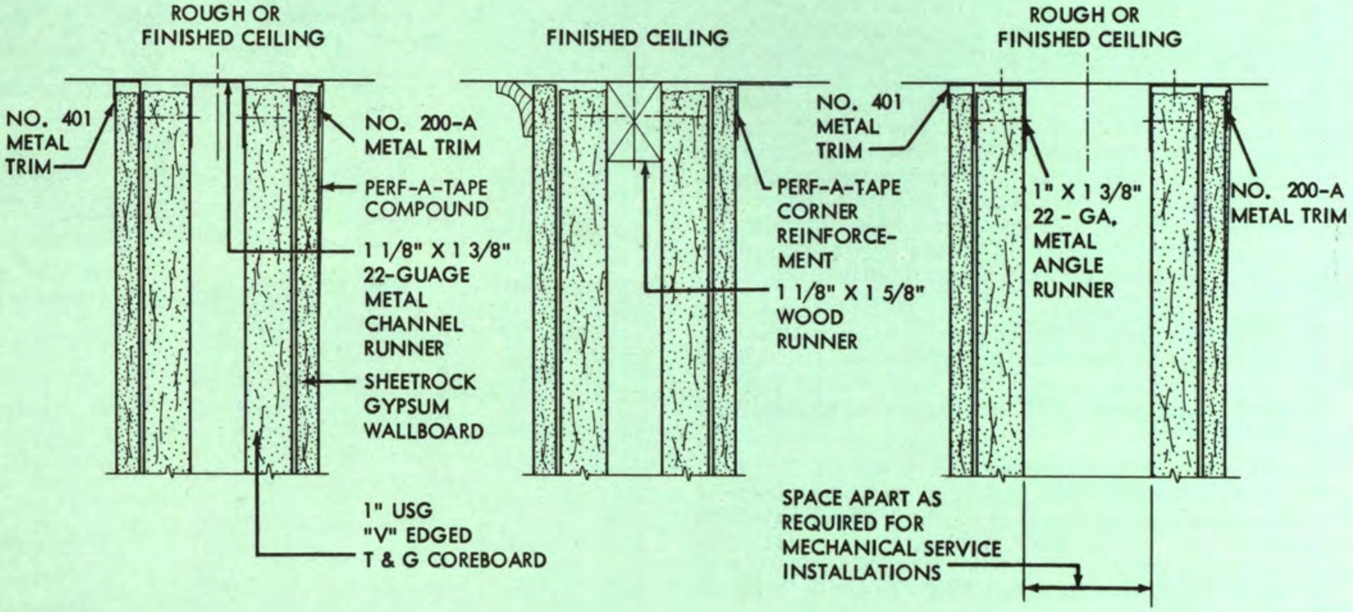
*T. M. Reg. U.S. Pat. Off.

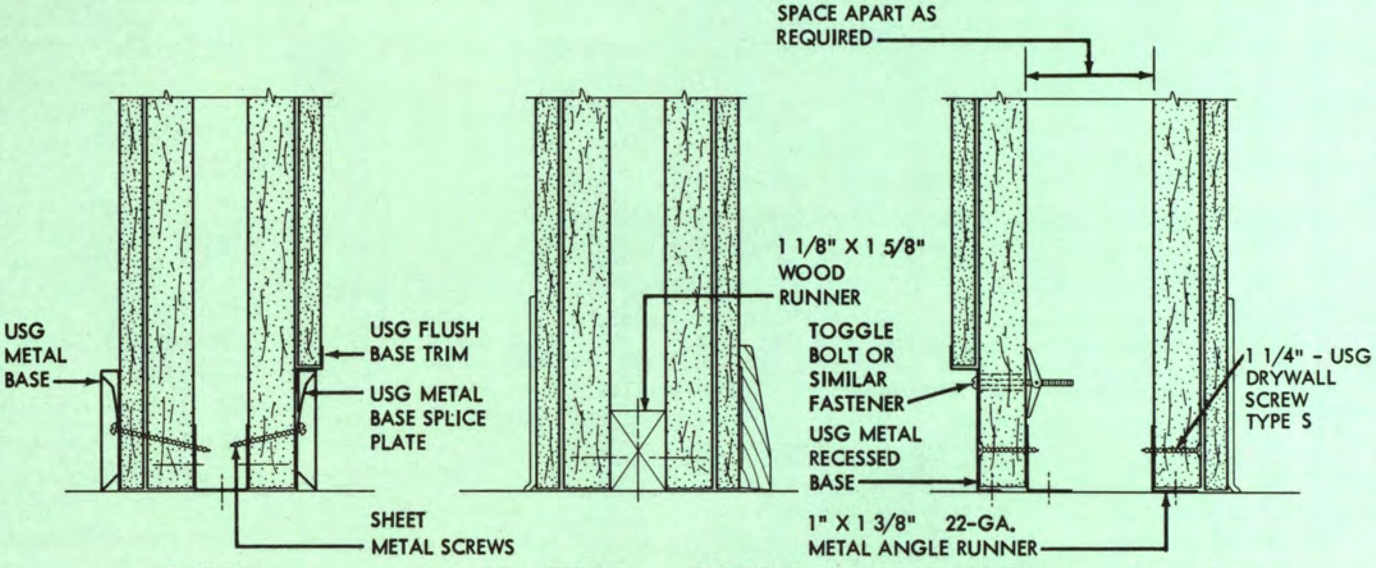
DOUBLE SOLID
PARTITION SYSTEM—ARCHITECTURAL DETAILS

CEILING ATTACHMENTS

Scale: 3″=1′-0″



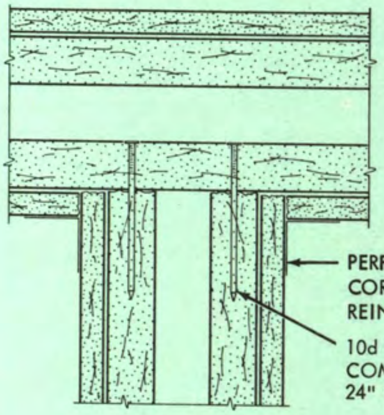
FLOOR ATTACHMENTS & BASES



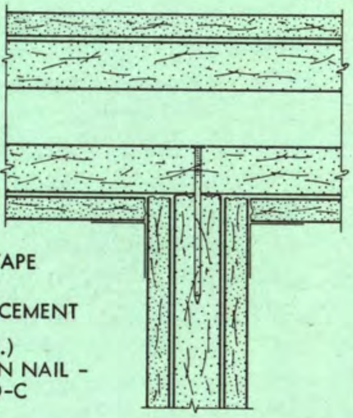
*T. M. Reg. U. S. Pat. Off.

INTERSECTING WALLS

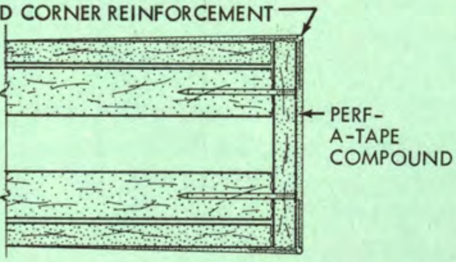
Scale: 3″ = 1′-0″


PERF-A-TAPE CORNER REINFORCEMENT
10d (MIN.) COMMON NAIL - 24" C-TO-C

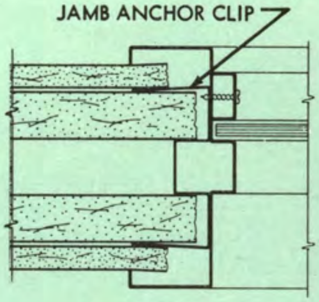
DOUBLE SOLID



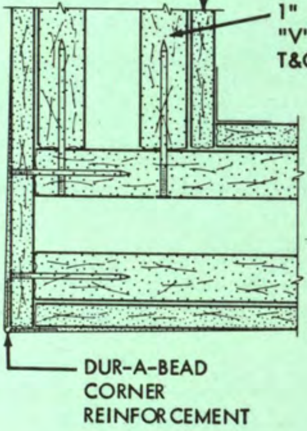
DOUBLE SOLID & 2″ SOLID



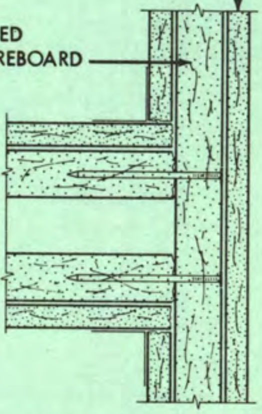
PARTITION TERMINAL



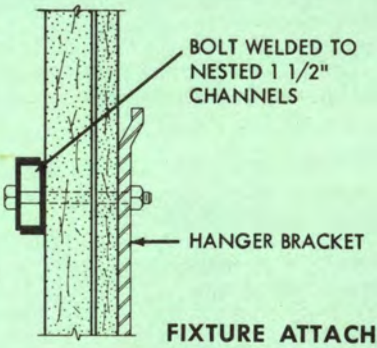
BORROWED LIGHT-JAMB


SHEETROCK GYPSUM WALLBOARD
1" USG "V" EDGED T&G COREBOARD
DUR-A-BEAD CORNER REINFORCEMENT

DOUBLE SOLID

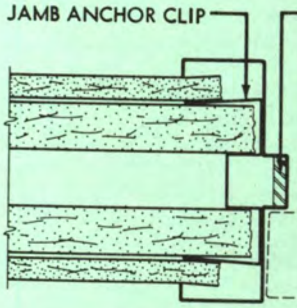


2″ SOLID & DOUBLE SOLID

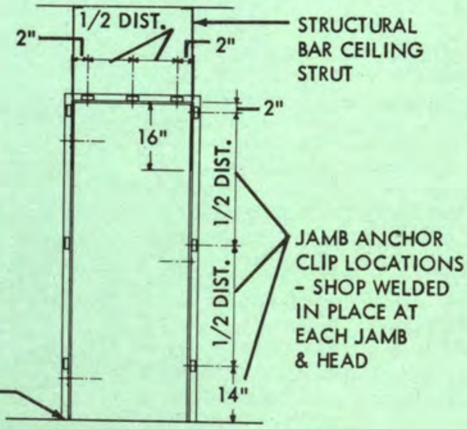


FIXTURE ATTACHMENT

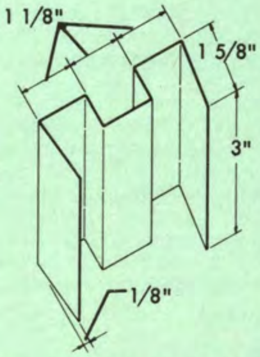
METAL DOOR FRAME


JAMB ANCHOR CLIP
1/4" (MIN.) HOT ROLLED STRUCTURAL BAR CEILING STRUT
FLOOR ANCHOR CLIPS SECURED WITH NO LESS THAN TWO SUITABLE FASTENERS

JAMB


1/2 DIST.
2"
2"
STRUCTURAL BAR CEILING STRUT
2"
16"
1/2 DIST.
1/2 DIST.
JAMB ANCHOR CLIP LOCATIONS - SHOP WELDED IN PLACE AT EACH JAMB & HEAD
14"

ELEVATION
(CROSS SECTION THRU FRAME)



JAMB ANCHOR CLIP

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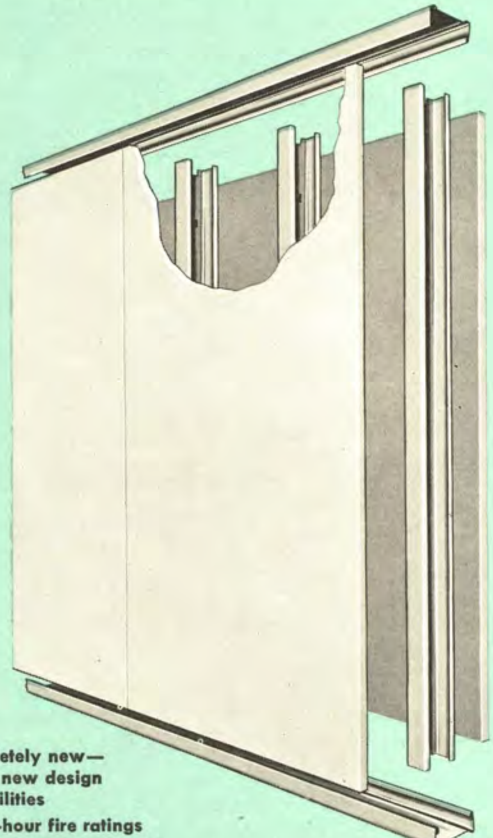
*T. M. Reg. U. S. Pat. Off.

METAL STUD
PARTITION SYSTEM—GENERAL INFORMATION



- **Completely new—opens new design possibilities**
- **1 to 2-hour fire ratings**
- **Ceiling heights up to 16′**
- **Adaptable to all types of construction**
- **Three versatile stud widths: 1⅝″, 2½″, 3⅝″**

DESCRIPTION

The USG* Metal Stud Partition is a non-load-bearing construction which consists of a lightweight electro-galvanized steel channel stud, typically set in steel runner tracks at floor and ceiling, and faced each side with gypsum wallboard. A specially designed, power-driven, self-tapping steel screw with a radius contoured head is used for the application of the wallboard to the stud. The wallboard can be applied either horizontally or vertically—in single layer or double wall method.

Stud—The metal channel stud is roll formed from 25-gauge electro-galvanized steel, in widths of 1⅝″, 2½″, 3⅝″, and in lengths suitable for various job requirements. Holes are punched 12″ from each end of the stud to facilitate installation of horizontal electrical wiring or conduit.

Floor and Ceiling Runners—Roll formed, 25-gauge, electro-galvanized steel runners, of width dimension corresponding to studs, provide the necessary floor and ceiling anchorage of the partition.

Gypsum Board—Single layer gypsum wallboard, ⅜″, ½″ or ⅝″ thick, may be applied to studs. Double layers of all sizes may be applied by mechanically attaching a base layer of gypsum backing board, and laminating or mechanically attaching a face layer of regular or specialty gypsum wallboard.

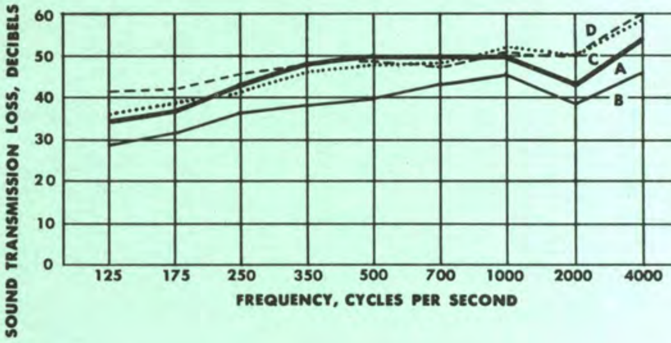
Fastener—The fastener is a special 1″ or 1⅝″ self-drilling, self-tapping, Phillips recess head screw with a rust-inhibitive coating, designed for attachment of gypsum board with a power tool.

Accessories—Flush and recessed metal base of special design, standard reveal-type metal base, and various angle and edge trims are available, and may be used with this assembly as design features or job conditions require.

Joint reinforcing tape, cement, and metal corner reinforcement are generally needed to complete all partition installations.

FUNCTION AND UTILITY

Sound Transmission Loss—Resistance to sound transfer covering a wide number of conditions may be provided with this assembly, due to its versatility of construction. Sound transmission loss of the basic single layer partition construction can be improved by 1) increasing the mass through multi-layer wallboard application, 2) addition of THERMAFIBER wool batts in the stud cavity, and 3) use of the RC-1 SHEETROCK Resilient Channel over the single layer construction.



Rated Assemblies.——— **Partition "A"**—3⅝″ USG Metal Studs; double layer ⅝″ SHEETROCK each side; joints treated.

Sound Transmission Loss Average 46 db
Sound Transmission Loss Class 46

——— **Partition "B"**—3⅝″ USG Metal Studs; single layer ⅝″ SHEETROCK each side; joints treated.

Sound Transmission Loss Average 39 db
Sound Transmission Loss Class 38

...... **Partition "C"**—3⅝″ USG Metal Studs; double layer ⅝″ SHEETROCK one side; RC-1 Resilient Channel positioned horizontally, spaced 24″ c. to c., and attached to studs through single layer ⅝″ SHEETROCK; ⅝″ SHEETROCK applied to RC-1 Channel other side; joints treated.

Sound Transmission Loss Average 46 db
Sound Transmission Loss Class 50

– – –**Partition "D"**—Same as Construction "C" with the addition of 3″ thick THERMAFIBER wool batts pressed tightly to the back surface of one side of the partition.

Sound Transmission Loss Average 48 db
Sound Transmission Loss Class 51 db

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†*Detailed test data is available from United States Gypsum upon request.*

*T. M. Reg. U.S. Pat. Off.

Fire Resistance—USG Metal Stud Partitions consist entirely of incombustible framing and facing materials. The following fire endurance ratings have been recorded for Metal Stud Partition assemblies by a nationally-recognized fire testing laboratory†:

1-Hour Fire Rating—3⅝" USG Metal Studs, 24" o.c., set in the DWR-358 floor and ceiling Runner, with single layer ⅝" Sheetrock* Firecode* (U.L. listed), applied vertically, attached each side with 1" USG Drywall Screws, Type S, power-driven and spaced 12" c. to c. in the field and 8" c. to c., staggered at vertical joints of the board. Screw heads and face joints treated with Perf-A-Tape* Joint System.

2-Hour Fire Rating—3⅝" USG Metal Studs, 24" o.c., set in the DWR-358 floor and ceiling Runner. Double layer ⅝" Sheetrock Firecode (U.L. listed), applied vertically, each side. Base layer screw attached with 1" USG Drywall Screws, Type S, power-driven and spaced 12" c. to c. in the field and 8" c. to c., staggered at vertical joints of the board. Face layer laminated with Perf-A-Tape Joint Compound and joints treated with Perf-A-Tape Joint System.

2-Hour Fire Rating—USG DWS-358 Metal Studs, spaced 24" c. to c., set in USG DWR-358 floor and ceiling runners suitably anchored to the floor and ceiling construction, with fasteners spaced 24" c. to c., double-layer ⅝" Sheetrock Firecode applied to each side of the studs; base layer applied vertically with vertical joints staggered on opposite sides of the partition and screw-attached with 1" USG Drywall Screws—Type "S" spaced 16" c. to c. in the field and vertical joints of the board; face layer applied vertically with vertical joints offset 24" from base layer joints and staggered on opposite sides of the partition and attached with 1⅝" USG Drywall Screws—Type "S" spaced 16" c. to c. in the field and vertical joints of the board; joints and screw heads treated with the Perf-A-Tape Joint System.

Adaptability—USG Metal Stud Partitions may be used in all types of new construction—commercial, institutional, industrial and residential—or in the remodeling and alteration of existing buildings. The use of dry construction methods reduces the amount of clutter, waste and mess; consequently, normal work, during modernization, can proceed with a minimum of inconvenience and disturbance.

Versatility—Depending on ceiling height, the optional use of single-layer application, horizontally or vertically, permits the most economical use of the wallboard material. Multi-layer construction may be specified for walls when greater resistance to sound transmission, fire, and increased strength are desirable.

Light Weight—A partition erected with 3⅝" studs and single-layer ⅝" Sheetrock, screw-applied each side, weighs approximately 6.5 lbs. per square foot. This low weight factor can influence structural design requirements resulting in substantial savings.

Economy—Low material cost, speed of erection, and versatility of the system provide realistic and competitive construction costs. Reduced weight, when compared to many commonly used partitions of the same thickness, can effect savings in structural design

LIMITATIONS

1. USG Steel Stud Partitions are non-load-bearing

2. The partition should not be used where normally exposed to excessive moisture or humidity

3. The gypsum wallboard finish should be protected against wetting or moisture absorption

4. Limiting heights:

Metal Stud	Maximum Height
1⅝"	9'—0"
2½"	12'—0"
3⅝"	16'—0"

Height is *not* limited by length of unsupported run or size and location of openings.

5. Recommended stud spacings:

Single Layer Construction (1)	Stud Spacing
⅜"	16" c. to c.
½"	24" c. to c.
⅝"	24" c. to c.

(*1*) *Also applies to base layer of double wall construction except studs may be spaced at 24" c. to c. where 2-layer ⅜" board is applied each side.*

6. RC-1 Sheetrock Resilient Channels should be attached to the metal studs through a single layer of wallboard which is attached to the metal stud. The RC-1 Sheetrock Resilient Channels should not be directly attached to the metal studs.

METAL STUD PARTITION SYSTEM—SPECIFICATIONS

SCOPE—Furnish all labor, materials and equipment to erect all interior non-load-bearing partitions with related metal components and accessories, as required, and surface with gypsum wallboard in accordance with the specifications and drawings.

GENERAL CONDITIONS—In cold weather the building should be heated during the application of the gypsum wallboard and joint treatment to maintain a uniform temperature in the range of 45°F. to 70°F., and ventilation shall be provided to eliminate excessive moisture.

All materials as specified shall be delivered on the job in original unopened containers or bundles, and stored in a place protected from damage and exposure to the elements.

Directions for the installation and application of all materials shall be in accordance with the latest printed directions of UNITED STATES GYPSUM.

MATERIALS—The products and materials hereinafter designated shall be as manufactured by UNITED STATES GYPSUM and shall be of the type, length and size as specified unless otherwise indicated.

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*T.M. Reg. U.S. Pat. Off.

METAL STUD
PARTITION SYSTEM—SPECIFICATIONS

A. Studs—DWS-158 (1⅝"), -212 (2½"), -358 (3⅝"), USG Metal Stud.

B. Metal Floor and Ceiling Runners—DWR-158 (1⅝"), -212 (2½"), -358 (3⅝"), USG Runner.

C. Resilient Channel—RC-1 SHEETROCK Resilient Channel.

D. Gypsum Board—(⅜") (½") (⅝") Tapered Edge SHEETROCK (Regular) (FIRECODE) 48" wide and in lengths as long as practical to minimize the number of joints and/or (⅜") (½") (⅝") BAXBORD* (Regular) (FIRECODE) Gypsum Backing Board.

E. Fasteners—(1") (1⅝") USG Drywall Screws-Type S.

F. Corner Bead—DUR-A-BEAD, PERF-A-BEAD, Corner Reinforcement.

G. Metal Trim—(#200A) (#200B), (#400), (#401), (#402) Metal Trim.

H. Metal Base and Accessories—Recessed Base, USG Metal Base, Metal Base Splice Plate, Flush Base Trim.

I. Wool Batt—THERMAFIBER Insulating Wool Batt 3" x 23" x 96".

J. Joint Treatment—PERF-A-TAPE Joint System.

K. Laminating Adhesive—PERF-A-TAPE Compound (embedding type) or SHEETROCK Brand Contact Bond Adhesive.

ERECTION—Runners shall be aligned accurately at floor and ceiling and securely anchored with suitable fasteners spaced not more than 24" on centers.

Studs shall be positioned vertically in the runners, spaced no greater than (16") (24") on centers. Anchor all studs located adjacent to door and window frames, partition intersections, and corners to runner flanges by positive screw engagement through each stud flange and runner flange. When necessary, studs shall be securely spliced with a minimum 8" nested lap in which 1 screw per stud flange is required.

Studs shall be located no more than 2" from all door frame jambs, abutting partitions, partition corners and other construction. Studs shall be securely anchored to the jamb and head anchor clips of each door or borrowed light frame by bolt or screw attachment (not required for frames with structural bar struts). Over metal door and borrowed light frames, a cut-to-length section of runner track with a web-flange bend at each end, shall be placed horizontally and securely screw-attached to the adjacent vertical studs. A cut-to-length stud shall be positioned at the location of vertical joints over the door frame header extending to the ceiling runner.

(Provisions for heavy fixture anchorage shall be as detailed in the drawings.)

Gypsum wallboard shall be applied with long dimension (parallel) (at right angles) to framing members, and all abutting ends and edges shall occur over stud flanges (where back-blocking used, float end joints between framing members). Wallboard of the maximum practical length shall be used to minimize end joints. All end joints shall be neatly fitted and staggered. Joints on opposite sides of the partition shall be so arranged as to occur on different studs.

For *vertical* wallboard application and where fire rating required, screw fasteners shall be spaced a maximum of 12" on centers in the field of the board and 8" on centers *staggered* along the vertical abutting edges. For horizontal wallboard application, screw fasteners shall be spaced a maximum of 12" on center in the field of the board and 12" on center along the abutting end joints. Screws shall be power-driven with an electric screw driver and screw heads shall provide a slight depression below the surface of the wallboard. Screws shall not be driven closer than ⅜" from edges and ends of the board.

In two-layer job laminated construction with PERF-A-TAPE* Joint Compound where the base layer is applied with the 1" USG Drywall Screw Type S spaced 12" c to c use sufficient 1⅝" screws in the face layer to hold SHEETROCK in place until properly adhered. Also used for complete mechanical attachment of face layer when base layer is attached with 1" USG Drywall Screw Type S spaced at 16" c to c. In this case, the face layer is applied with the 1⅝" screw spaced 16" c to c on both sidewalls and ceilings.

For greater than average sound transmission loss erect 3⅝" Metal Studs 24" c. to c. and attach single layer ⅝" SHEETROCK Wallboard to each side. On one side attach, by laminating or with the 1⅝" USG Drywall Screw—Type "S," a second layer of ⅝" SHEETROCK. On the other side RC-1 Resilient Channels shall be positioned horizontally spaced 24" c. to c. and attached to the metal studs with 1" USG Drywall Screws—Type "S" driven through the single layer ⅝" SHEETROCK. At the floor line a 3" strip of ½" gypsum board shall be applied to serve as backing for the gypsum board facing. The first RC-1 Resilient Channel shall be located 24" up from the floor line and a maximum of 6" down from the ceiling line. A layer of ⅝" SHEETROCK gypsum wallboard shall be screw applied to the resilient channels.

The addition of 3" x 23" x 96" THERMAFIBER Insulation Batts to the stud cavity, pressed tightly in place. Stapled or cemented to the back face of one side of the partition will increase the sound transmission loss of the previously described partition.

All joints, screw head and other depressions in the surface of the wallboard shall be treated in accordance with the recommended manner with PERF-A-TAPE Joint System.

All internal and external angles formed by the intersection of either wallboard surfaces or other surfaces shall be treated with metal trim or PERF-A-TAPE Joint System in accordance with the drawing details.

All vertical or horizontal external corners shall have PERF-A-BEAD or DUR-A-BEAD Corner Reinforcement applied in accordance with manufacturers directions.

RELATED INCLUSIONS

Door and Window Frames—*Under the appropriate section of the specification indicate that metal door and borrowed light frames shall be formed from not less than 18-gauge steel, shop primed. Anchor insert clips, minimum, 18-gauge steel, shall be shop welded in each jamb and head (sill) in accordance with details on page 35. Door frames shall be securely anchored to the floor by two power activated anchors, or equivalent attachment, through a 14-gauge steel slip at each jamb that is shop welded to trim flanges.*

Door frame struts, when required, shall be ¼" minimum thickness, hot rolled steel bar stock and of sufficient width to completely fill doorstop void, anchoring jamb securely. All door frame struts shall be supplied as an integral part of the door frame.

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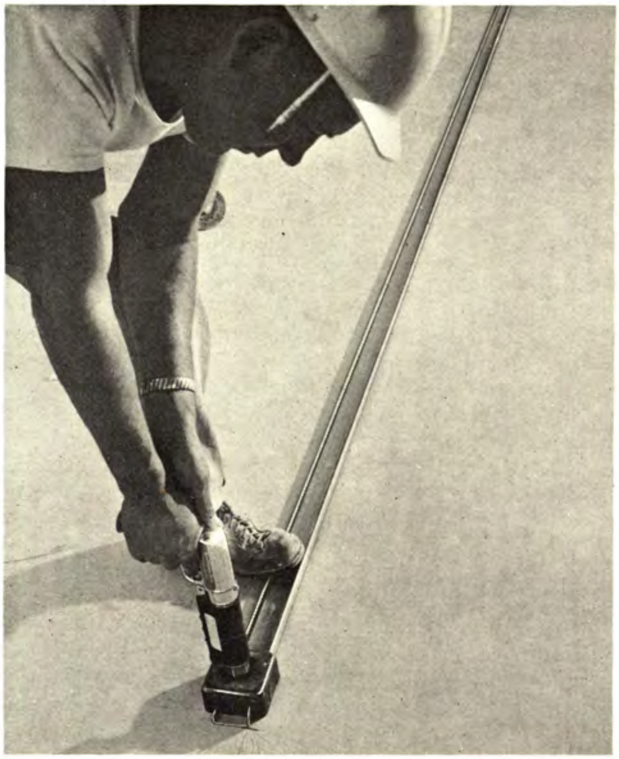
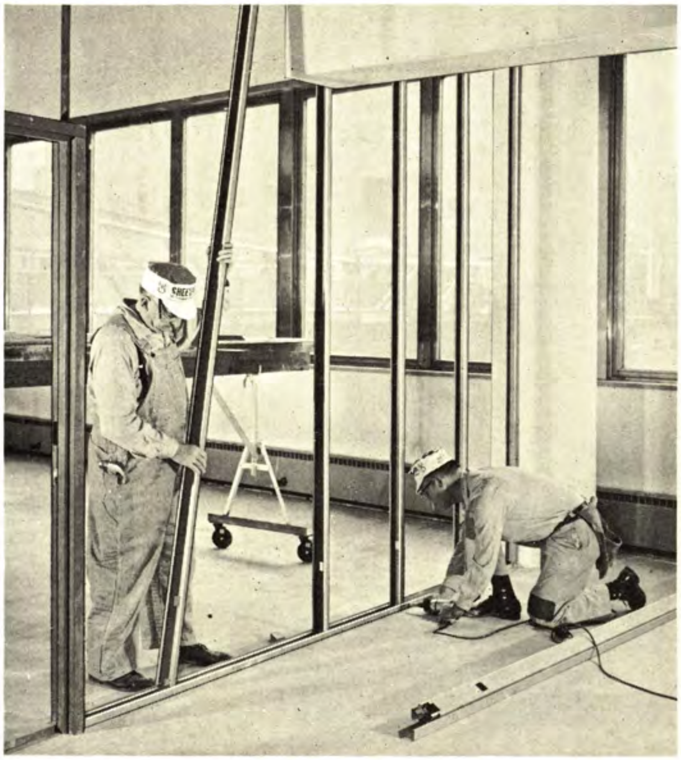
*T. M. Reg. U. S. Pat. Off.

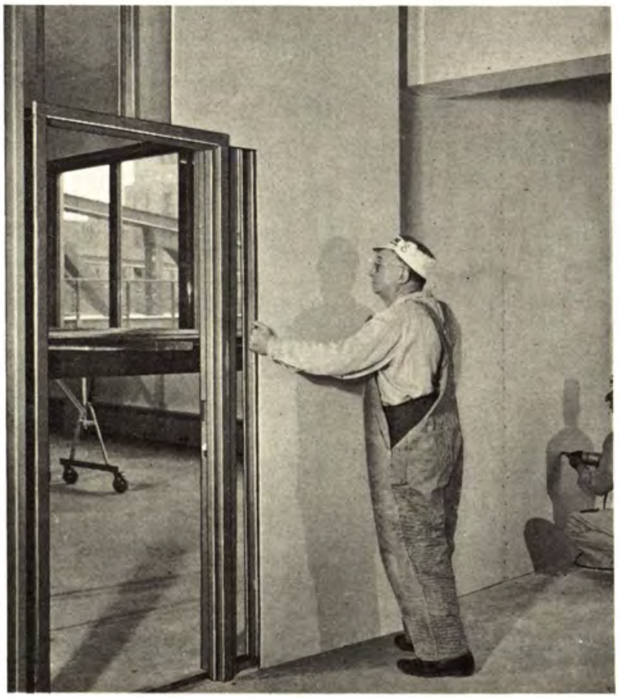
INSTALLATION



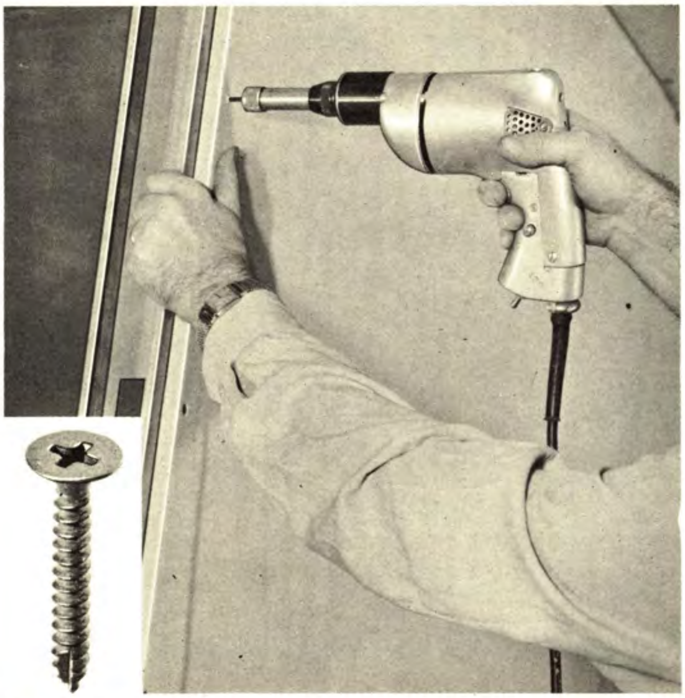
Metal floor and ceiling runners are installed.



Metal studs are inserted into floor and ceiling runners, and twisted into position.



Vertically erected wallboard panel is inserted into door frame.



USG Drywall screws are driven using a specially designed power tool, and 1″-Type S, screw.

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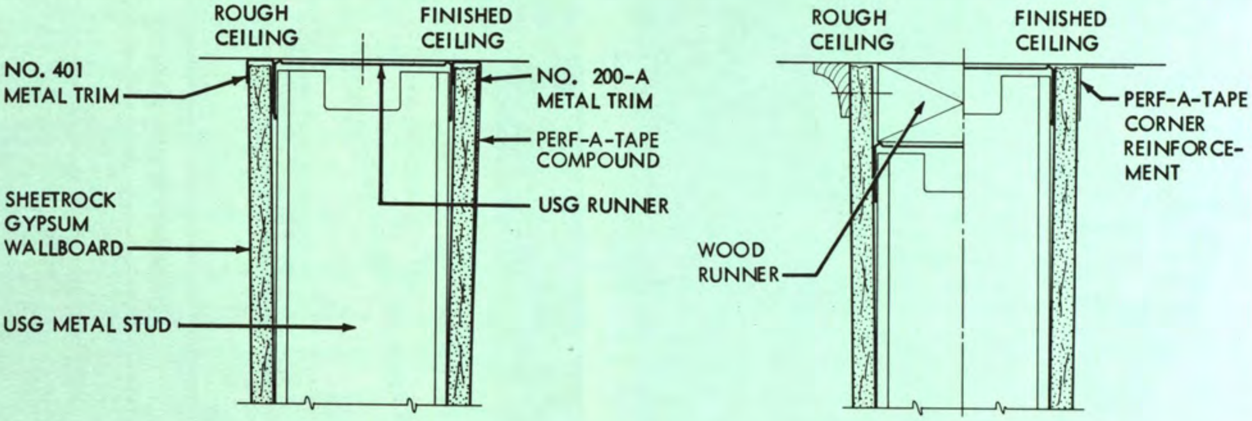
*T. M. Reg. U. S. Pat. Off.

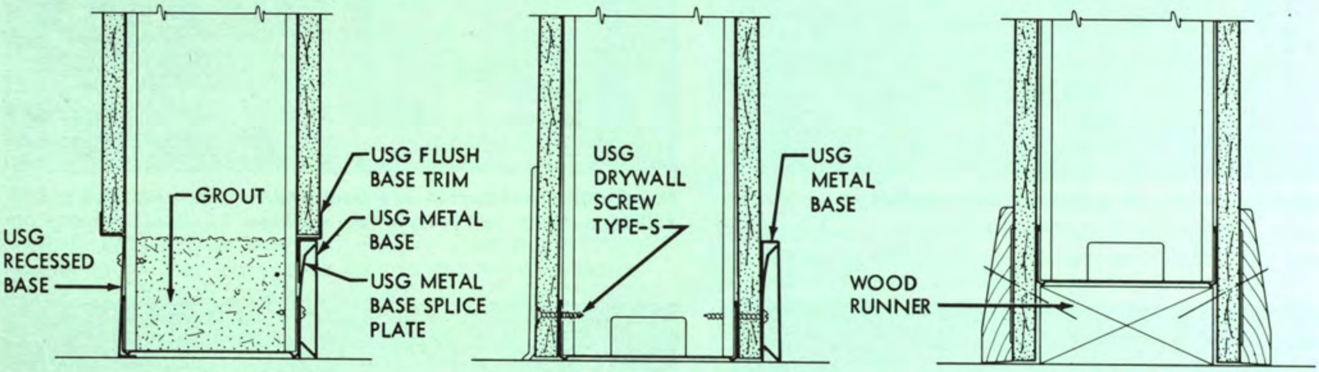
METAL STUD
PARTITION SYSTEM—ARCHITECTURAL DETAILS

CEILING ATTACHMENTS

Scale: 3″ = 1′-0″



FLOOR ATTACHMENTS & BASES



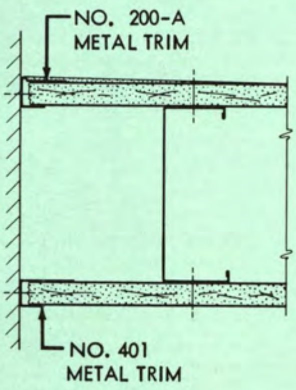
METAL

RUBBER

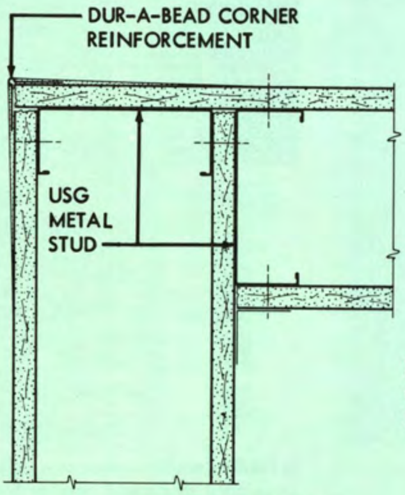
METAL

WOOD

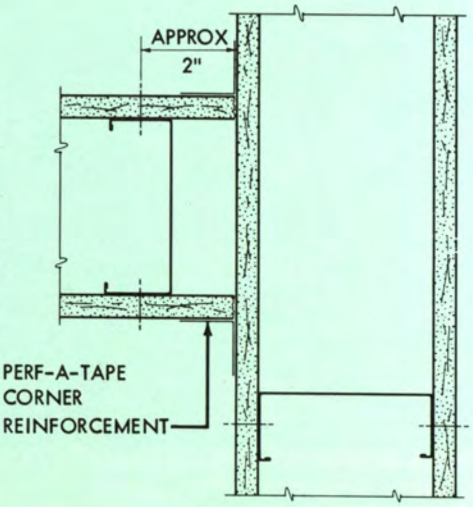
INTERSECTING WALLS



MASONRY WALL



PARTITION CORNER

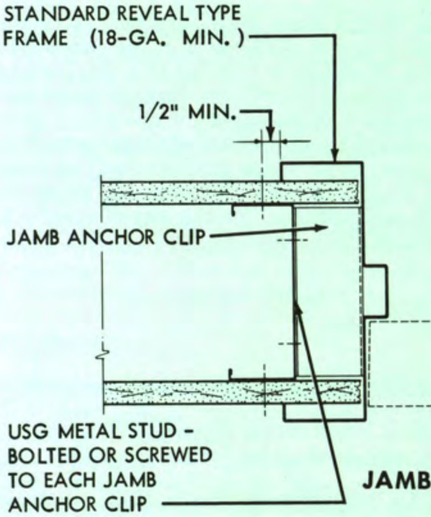


PARTITION "T"

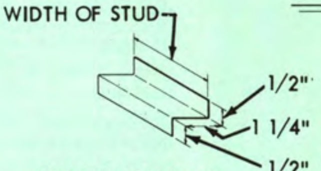
*T. M. Reg. U. S. Pat. Off.

METAL DOOR FRAME

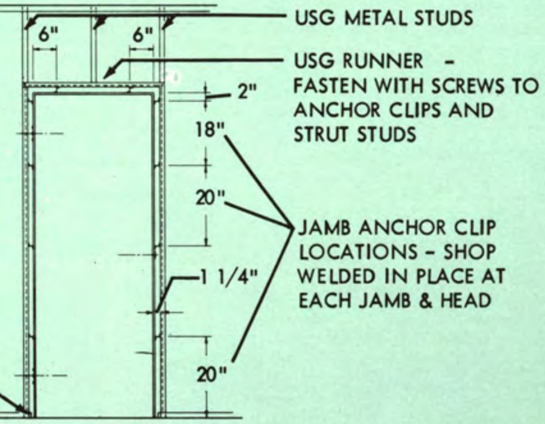
Scale: 3″ = 1′-0″


STANDARD REVEAL TYPE FRAME (18-GA. MIN.)
1/2" MIN.
JAMB ANCHOR CLIP
USG METAL STUD - BOLTED OR SCREWED TO EACH JAMB ANCHOR CLIP

JAMB

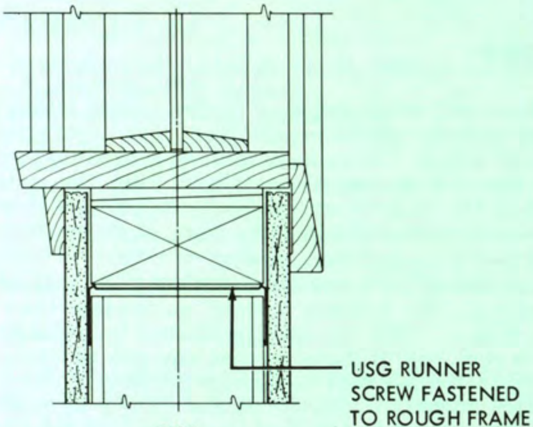


JAMB ANCHOR CLIP


6"
6"
USG METAL STUDS
USG RUNNER - FASTEN WITH SCREWS TO ANCHOR CLIPS AND STRUT STUDS
2"
18"
20"
1 1/4"
20"
JAMB ANCHOR CLIP LOCATIONS - SHOP WELDED IN PLACE AT EACH JAMB & HEAD
FLOOR ANCHOR CLIPS SECURED WITH NO LESS THAN TWO SUIT-ABLE FASTENERS

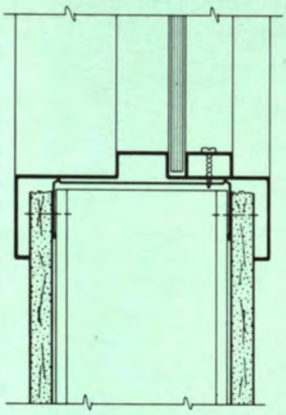
ELEVATION
CROSS SECTION THRU FRAME

WOOD BORROW LIGHT FRAME

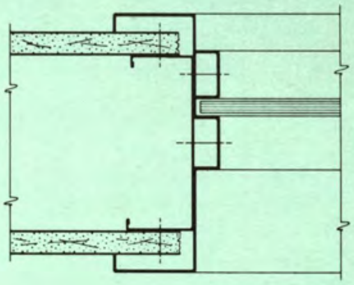


SILL

METAL BORROW LIGHT FRAME

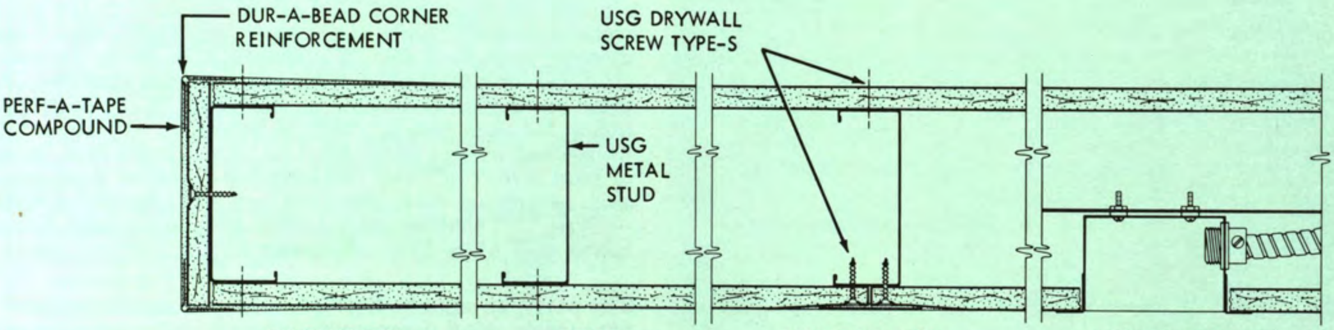


SILL



JAMB

WALL PLAN SECTIONS



PARTITION TERMINAL

STUD

WALLBOARD EDGE JOINT

OUTLET BOX

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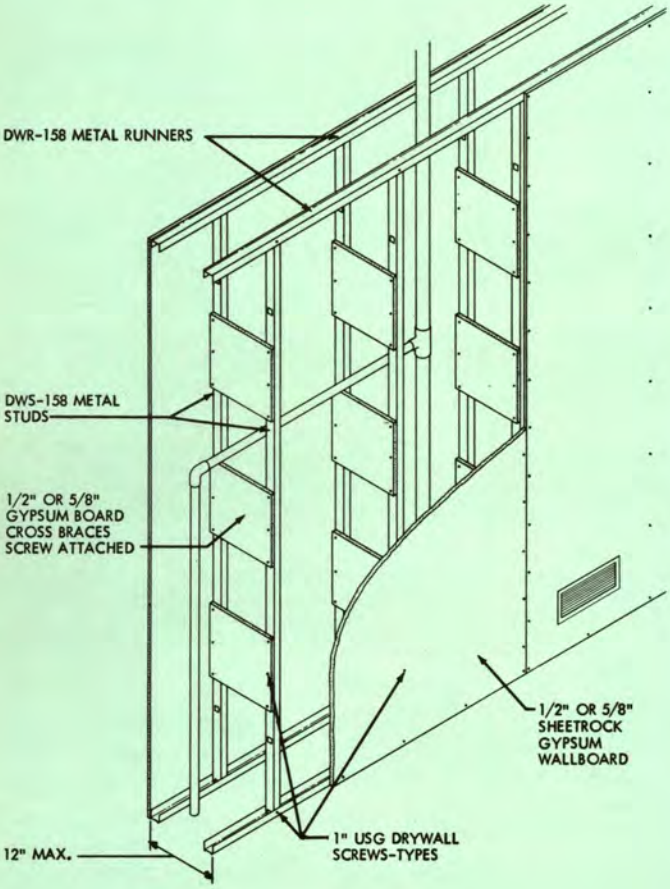
*T.M. Reg. U.S. Pat. Off.

METAL STUD
CHASE WALL CONSTRUCTION

USG* DRYWALL METAL STUD
CHASE WALL CONSTRUCTION


DWR-158 METAL RUNNERS
DWS-158 METAL STUDS
1/2" OR 5/8" GYPSUM BOARD CROSS BRACES SCREW ATTACHED
12" MAX.
1" USG DRYWALL SCREWS-TYPES
1/2" OR 5/8" SHEETROCK GYPSUM WALLBOARD

DESCRIPTION

The USG Metal Stud Chase Wall construction consists of the same components required for the USG Metal Stud construction. It differs in the use of a double row of metal studs with gypsum *board* cross braces between the rows. This construction is designed for use where greater core widths are needed for pipe chase enclosures and other service installations. It provides the same advantages as thd USG Metal Stud Partition System such as speed of erection and low cost and enables the use of one component system throughout a building.

LIMITATIONS

1. The recommended limiting height shall be 10′ 0″.
2. Minimum size of SHEETROCK Gypsum Wallboard face panels or base panels shall be ½″ x 4′ x ceiling height.
3. The USG DWS Metal Stud Chase Wall partition is non-load bearing.
4. The partition should not be used where normally exposed to excessive moisture or humidity.

ERECTION

For chase wall construction, a double row of DWR-158 runners shall be placed parallel and lined accurately at floor and ceiling. The runners shall be spaced no further apart than 12 inches, as measured from the outside flanges of the runners, and securely anchored with suitable fasteners, spaced not more than 24 inches c. to c.

A double row of DWS-158 metal studs shall be positioned vertically in the runners, spaced no greater than 24 inches c. to c., with the spacing started from the same point in each row of studs, so that any pair of studs are opposite each other with the flanges pointing in the same direction. Anchor all studs to runner flanges by positive screw engagement to the stud flange and runner flange with the USG drywall screw—Type "S".

Cross bracing between the rows of studs shall be cut from (½″) (⅝″) SHEETROCK into minimum 12″ deep sections by chase width and screw attached to the stud webs at quarter points in the partition height, with USG drywall screws—Type "S", spaced 8″ c. to c., in each stud web or a minimum of three screws per stud web. A cross brace shall be located at the center of the partition height for each pair of studs. A minimum of three cross braces per pair of studs shall be used. Single face layer or base layer (½″) (⅝″) SHEETROCK Gypsum Wallboard shall be applied vertically. One inch USG drywall screws—Type "S", shall be spaced 12″ c. to c. in the field of the board and 8″ c. to c. staggered at the vertical joints.

The partition shall be finished in the recommended manner, using joint compound, internal, external corners, metal trim, and other accessories per standard recommendations of USG.

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*T. M. Reg. U. S. Pat. Off.

METAL STUD

COMPOSITE DRYWALL-PLASTER PARTITION

DESCRIPTION

The USG Metal Stud composite plaster and drywall partition is a non-load bearing construction consisting of a lightweight galvanized steel channel stud set in steel runner tracks at floor and ceiling faced one side with a plaster finish, and a gypsum wallboard finish on the other. The need for composite drywall plaster partition is apparent in finishing wet area rooms with Portland Cement Plaster such as bath and showers, adjacent to corridors or other non-wet areas. With the USG Metal Stud System, one side of the studs would be finished with Portland Cement Plaster, an embedding coat of cement and ceramic tile, while the other side would be finished with SHEETROCK Gyspum Wallboard.

LIMITATIONS

1. Recommended limiting height is 12′0″.
2. This partition is recommended for use with plaster on one side only.
3. The composite partition is recommended for use with 2,000 psi minimum compressive strength plaster only.
4. Hot dipped galvanized L-P 3⅝″ metal studs, and L-P 3⅝″ metal runners only shall be used.
5. ⅝″ minimum thickness of SHEETROCK gypsum wallboard shall be used on the wallboard side of the partition.

MATERIALS

The products and materials herein designated shall be manufactured by U.S. Gypsum.

A Studs—USG L-P 3⅝″ metal stud.
B Metal floor and ceiling runners—USG L-P 3⅝″ runner track.
C Gypsum board—⅝″ tapered edged SHEETROCK (regular) (FIRECODE) 48″ wide.
D 2,000 psi minimum compressive strength Portland Cement Plaster or gypsum sand basecoat plaster.
E 3.4 lb. (4.0 lb.) USG ⅜″ Riblath, 27″ x 96″.

ERECTION

L-P runner tracks shall be aligned accurately at floor and ceiling and securely anchored with suitable fasteners spaced not more than 24″ c. to c.

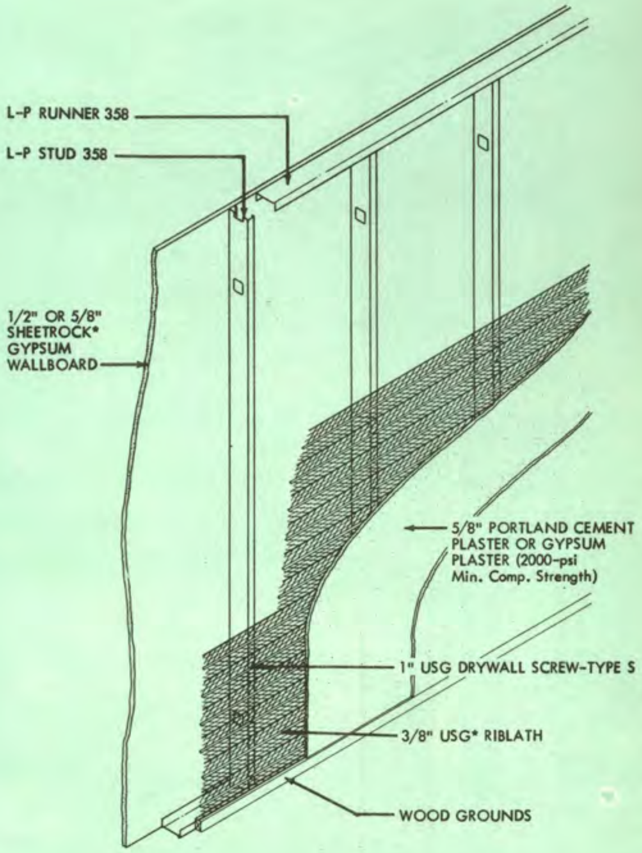
L-P Metal Studs shall be positioned vertically in the runners spaced not greater than 24″ c. to c.

On one side of the partition USG ⅜″ Riblath positioned with the ribs horizontal and with the peak of the ribs against the studs, shall be attached to the studs with USG Drywall Screws—Type "S" through every other rib, or at approximately nine inches c. to c. Over the Riblath a ⅝″ thickness of 2,000 psi minimum compressive strength Portland Cement plaster faced with an embedding coat of cement and ceramic tile or ⅝″ thick 2,000 psi minimum compressive strength gypsum sanded plaster with a lime putty gauged finished coat, shall be applied.

The second side of the partition shall be finished with a minimum thickness of ⅝″ SHEETROCK Gypsum Wallboard, screw applied with USG drywall screws—Type "S", spaced 12″ c. to c. in the field of the board and 8″ c. to c. staggered along vertical abutting edges.

The wallboard side of the partition shall be finished with Metal Accessories and/or PERF-A-TAPE Joint System per standard recommendations of USG.

USG* DRYWALL METAL STUD
COMPOSITE DRYWALL—PLASTER PARTITION


L-P RUNNER 358
L-P STUD 358
1/2" OR 5/8" SHEETROCK* GYPSUM WALLBOARD
5/8" PORTLAND CEMENT PLASTER OR GYPSUM PLASTER (2000-psi Min. Comp. Strength)
1" USG DRYWALL SCREW-TYPE S
3/8" USG* RIBLATH
WOOD GROUNDS

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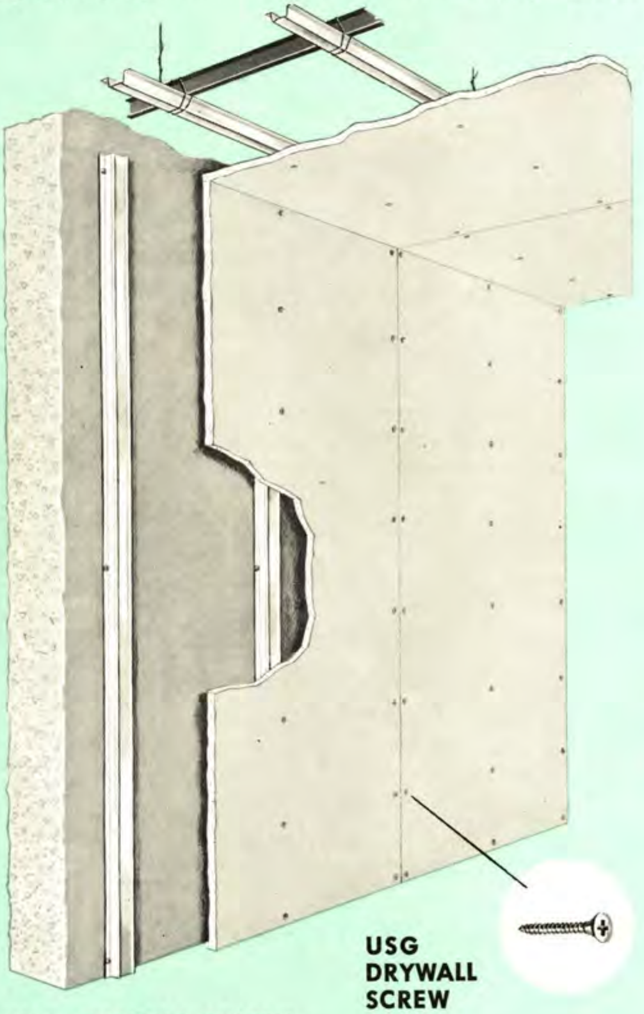
*T. M. Reg. U. S. Pat. Off.

CEILING AND WALL FURRING SYSTEMS

CEILING SYSTEM

The USG Drywall Ceiling System is an incombustible construction which employs the attachment of either gypsum wallboard or backing board to a lightweight furring member with power-driven screws of unique design. A new channel, especially designed to facilitate screw fastening, or the USG Metal Stud, may be used as a ceiling furring member. The system involves only simple attachment of the furring members to a number of standard support members, or to new or existing surfaces.

Details.................................see pages 42, 43
Specifications..........................see pages 39, 40



WALL FURRING SYSTEM

The USG Drywall Wall Furring Systems consist of the same basic components and materials as USG Drywall Ceiling Systems. Various gypsum wallboard or backing board products are fastened to metal furring channels with power-driven screws.

The USG Drywall Furring Channel may be attached direct to masonry or concrete surfaces, or the USG Metal Stud may be installed as a free-standing furred wall.

Details............................see pages 42 and 43
Specifications.....................see pages 39 and 40

FURRING MEMBERS

Adaptability—USG Ceiling and Wall Furring Systems may be used in virtually all types of new construction, and are adaptable to modernization of existing buildings.

Versatility—USG Ceiling and Wall Furring Systems may be installed over a wide variety of support members or base surfaces. The USG Metal Studs, as a ceiling furring member, will meet long span requirements resulting from the location of large ducts or pipes in the ceiling space. Gypsum board ceiling furring systems provide a firm base for the adhesive application of acoustical tile.

Strength—USG Ceiling and Wall Furring members are especially designed to provide maximum rigidity and spacing of components.

CEILING SYSTEM

- *New advanced attachment method*
- *1½-hour fire rating*
- *Simplified components for greater economy*

Furring Channel—The channel is roll-formed from 25-gauge electro-galvanized steel, and is available in one standard size, ⅞″ depth x 12′-0″ length. It offers the following design features:

1. 2¾″ *width*, overall, with ½″ wing flanges provides firm attachment to all support members and surfaces and minimizes distortion, twisting or rocking.
2. Section design permits *easy splicing* (no splicing plates required) and easy nesting for storage and shipment.
3. 1⅜″ *web* provides ample width to accommodate two rows of screws for *abutting* gypsum board edges and ends.

Metal Stud—The metal channel stud is roll-formed from 25-gauge electro-galvanized steel. It is available in widths of 1⅝″, 2½″ and 3⅝″, and in lengths to meet normal job requirements.

Fastener—The fastener is a special 1″ or 1⅝″, self-drilling, self-tapping, Phillips recess head screw with a rust-inhibitive coating. When driven with the recommended power equipment, this fastener provides firm, tight attachment of gypsum board. It also produces an optimum surface depression for proper screw head "spotting," while minimizing incidence of face paper cutting and core fracturing.

Gypsum Board—Single layer gypsum wallboard or backing board in thicknesses of ⅜″, ½″ or ⅝″ is screw-fastened to either the metal furring channel or stud used as a furring member.

Furring Clip—The Drywall Furring Channel Clip is used to attach the USG Drywall Furring Channel to 1½″ cold rolled channels.

Accessories—Various metal edge trims are available to conceal gypsum board edges at ceiling angles. Standard joint treatment products are used to treat ceiling angles where required, and to conceal joints and screw head dimples.

*T. M. Reg. U. S. Pat. Off.

FUNCTION AND UTILITY

Fire Resistance—The ceiling system employing the USG Drywall Furring Channel or the USG Metal Stud will consist entirely of incombustible framing and facing materials. In accordance with ASTM fire testing procedures, a 1½-hour fire rating was awarded the following construction:

1½-Hour Fire Rating—2-inch sand-gravel concrete slab on metal lath; steel bar joists; ceiling of ⅝″ SHEETROCK FIRECODE (UL listed) gypsum wallboard applied horizontally and screw-fastened, 12″ c. to c., to USG Drywall Furring Channels spaced 24″ o.c. and wire-tied direct to bar joists at 48″ intervals; wallboard joints and screw heads treated with reinforcing tape and joint cement.

Economy—As a result of fewer components and simplified installation procedures, material cost is reduced while ease and speed of erection are increased.

LIMITATIONS

1. Gypsum board ceilings should not be used where they would normally be exposed to excessive moisture or continued wetting.
2. See technical data, for furring member and screw spacing.

WALL FURRING SYSTEM

- *New advanced attachment method*
- *Single- or double-layer construction*
- *Installed over most any type masonry*
- *Available with built-in vapor barrier*

FUNCTION AND UTILITY

Adaptability—USG* Drywall Wall Furring System may be used to advantage in all types of new construction, and in the modernization of existing buildings.

Versatility—The systems may be installed over virtually any type of masonry—brick, tile, PYROBAR* Gypsum Tile, monolithic concrete.

Vapor Barrier—When used with foil back SHEETROCK* Wallboard, a moisture vapor barrier is obtained.

Economy—USG Drywall Wall Furring Systems offer the same savings in time and materials as the ceiling systems, as a result of simplified procedures and fewer components.

LIMITATIONS

For Furred Walls, when using the Adjustable Wall Furring Bracket, the limiting height is 12′-0″.

TECHNICAL DATA

Attachment Schedule

Furring Member	For Attachment to:						
	1½″ Channel	Bar Joists	Concrete Joists	Wood Joists	Wood Beams	Concrete Slab	Masonry
DWC Furring Channel	X	X	X	X	X	X	X
USG Metal Stud All Sizes	X	X					

TECHNICAL DATA

USG DRYWALL CEILING SYSTEMS—COMPONENT SPACING

Type Furring Member		CEILING SYSTEMS—COMPONENT SPACING						
		Furring Member Center to Center Spacing			Main Support Member Center to Center Spacing			Hangers Center to Center
		For Wallboard Thickness Of:						
		⅜″	½″	⅝″	⅜″	½″	⅝″	
DWC Furring Channel		16″	24″	24″	5′-0″	4′-0″	4′-0″	4′-0″
USG Metal Stud	1⅝″ erected with both flanges up and against main support member	16″	24″	24″	7′-0″	6′-0″	6′-0″	4′-0″
	2½″	16″	24″	24″	6′-0″			
	3⅝″	16″	24″	24″	8′-0″			

USG DRYWALL SCREW SPACING

	GYPSUM BOARD PRODUCT	1″ Screw	1⅝″ Screw
		Field and Abutting Edges or Ends (1)	
Single Layer or Base Layer	⅜″, ½″, ⅝″ Regular, Insulating, FIRECODE, SHEETROCK Gypsum Wallboard, and BAXBORD Backing Board. (2)	12″ c. to c.	
Double Layer without adhesive	⅜″, ½″, ⅝″ Regular, Insulating, FIRECODE, SHEETROCK Gypsum Wallboard.	(Base Layer) 16″ c. to c.	(Face Layer) 16″ c. to c.
Double Layer with adhesive	⅜″, ½″, ⅝″ Regular, Insulating, FIRECODE, SHEETROCK Gypsum Wallboard.	(Base Layer) 12″ c. to c.	(Face Layer) As required for Temporary Mechanical Fastening

(1) Board applied with long dimension right angles or parallel to furring members.
(2) BAXBORD as listed here, applies to the Base Layer in Double Layer Construction or to use as a single layer base for adhesive application of acoustical tile.

SPECIFICATIONS
CEILING AND WALL FURRING
SCOPE

Furnish all labor, materials and equipment required to erect all *furred* gypsum board ceilings and walls complete with related metal components and necessary accessories in accordance with the drawings and as specified herein.

GENERAL CONDITIONS

In cold weather the building shall be heated during the application of gypsum board and joint treatment, to maintain a uniform temperature in the range of 45°F. to 70°F., and ventilation shall be provided to eliminate excessive moisture.

All materials as specified shall be delivered to the job in original unopened containers, and stored in a place protected from damage and exposure to the elements.

Directions for the installation and application of all materials shall be in accordance with the latest printed directions of United States Gypsum.

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*T. M. Reg. U. S. Pat. Off.

(1) Additional information is available from your local U.S.G., Sales, or Architect Service Representative.

CEILING AND WALL FURRING SYSTEMS—SPECIFICATIONS

MATERIALS

The materials hereinafter designated shall be products of United States Gypsum and shall be of the type, length and sizes as specified, unless otherwise indicated.

A. **Furring Channels**—DWC Furring Channel and/or DWS-158 (1⅝″), —212 (2½″), —358 (3⅝″) USG Metal Stud

B. **Carrying Channels**—1½″ Cold Rolled Channels

C. **Hangers**—9-gauge Galvanized Hanger Wire, as or required

D. **Furring Clip**—Drywall Furring Channel Clip.

E. **Tie Wire**—(16 ga.) (18 ga.) Galvanized Annealed Wire

F. **Gypsum Board**—(⅜″) (½″) (⅝″) Tapered Edge SHEETROCK*, (Regular) (Insulating—Foil Back) (FIRECODE*) 48″ wide and in lengths as long as practical to minimize the number of end joints, and/or (⅜″) (½″) (⅝″) BAXBORD* Gypsum Backing Board, (Insulating—Foil Back) (FIRECODE).

G. **Fasteners**—(1″) (1⅝″) USG Drywall Screw-Type S

H. **USG Adjustable Wall Furring Bracket.**

I. **¾″ Cold Rolled Channels**—for wall furring.

J. **Metal Trim**—(#200A) (#200B) Metal Trim (#400) (#401) (#402) Metal Trim.

K. **Metal Base and Accessories**—Recessed Base, Flush Base Trim, Metal Base, Metal Base Splice Plate.

L. **Joint Treatment**—PERF-A-TAPE* Joint System

CEILING INSTALLATION

Hangers for suspended ceilings shall be securely anchored to the structural frame or imbedded in concrete slabs. Spacing of hangers shall not exceed 4′-0″ along the 1½″ cold-rolled carrying channels. The spacing of 1½″ channels shall be determined by the ceiling furring channel used. See Technical Data Component Spacing Table for spacing.

(DWC Furring Channels) (USG Metal Studs) shall be attached at no greater than 24″ center to center, and shall be attached in a direction at right angles to 1½″ carrying channels or main support members and securely wire-tied, clipped or anchored by other suitable fastening. End splices shall be provided by nesting channels no less than 8″ and securely wire-tying.

Gypsum board shall be applied with the long dimension at right angles to the furring channels in all instances where practical and where fire rating is required. End joints shall be centered over furring channels (where back-blocking used, float end joints between furring channels), neatly fitted, and staggered. Gypsum board of maximum practical length shall be used to minimize end joints. Gypsum board shall be properly supported around all cut-outs and openings in ceiling.

Screw fasteners shall be spaced a maximum of 12″ o.c. in the field of the board, and 12″ o.c. along abutting ends or edges.

All screws shall be power-driven with an electric screwdriver and screw heads shall provide a slight depression below the surface of the board. Screws shall not be driven closer than ⅜″ from edges and ends of the board.

All joints, screw head depressions or any defects incurred during the installation of the gypsum board shall be treated in accordance with the prescribed manner with PERF-A-TAPE Joint System. (Joints and screw heads are left exposed if gypsum board is to serve as a base for adhesive application of acoustical tile, and fire rating not required.)

Metal edge trim shall be installed at ceiling angles and around ceiling cut-outs and openings in accordance with the plans, or as otherwise required.

WALL FURRING INSTALLATION

DWC Furring Channels shall be attached to masonry or concrete surfaces, either vertically or horizontally, at maximum 24″ centers with hammer-set or powder-activated stud fasteners, or concrete stub nails, spaced 24″ center to center through alternate wing flanges (staggered) of the furring channel.

Regular or insulating (foil back) gypsum board shall be applied with the long dimension at right angles to furring channel. All abutting end or edge joints shall occur over the web surface of furring channel (where back-blocking used, float end joints between furring channels), and shall be fitted neatly and accurately. End joints shall be staggered.

Screw fasteners shall be spaced 12″ o.c. along each furring channel, and placed no closer than ⅜″ from ends and edges of board. Screws shall be power-driven and screw heads shall provide a slight depression below the surface of the board.

Where DWC Furring Channel is installed to exterior walls and there is a possibility of water penetration through the walls, install an asphalt felt protection strip between the DWC Furring Channel and the wall surface.

Treat all joints and screw head depressions with PERF-A-TAPE Joint System in accordance with manufacturer's directions.

DWC FURRING CHANNEL—
USG ADJUSTABLE WALL FURRING BRACKET

USG Adjustable Wall Furring Brackets, with serrated edges up, shall be attached to the masonry walls not over 4″ from columns or other abutting construction and not over 36″ on center horizontally and as required above and below windows. The wall furring brackets shall also be spaced 48″ c. to c. vertically for support of the ¾″ cold Rolled Furring channels. Also the vertical spacing of the Wall Furring Bracket and ¾″ Cold Rolled Furring channels shall not be more than 6″ from the floor and ceiling. For attachment of Wall Furring Brackets use (one 2″ cut nail in mortar joints of brick, clay tile, or cement block or in the field of lightweight aggregate blocks) (⅝″ concrete stub nails or power driven nails or other suitable fasteners in monolithic concrete). Fastenings shall be driven through top hole of bracket. ¾″-furring channels shall be laid horizontally on the furring brackets with the legs down, plumbed to a line with the ceiling runner and base, and wire tied to the bracket with a double strand of 18-gauge tie wire. Excess bracket length shall be bent down.

The DWC Furring Channel shall be erected vertically and wire tied with a double strand of 16-gauge galvanized tie wire at the junction of each ¾″ channel. The DWC Furring Channels shall be spaced at (16″ c. to c. for ⅜″ wallboard) (24″ c. to c. for ½″ or ⅝″ wallboard) maximum.

Insulating SHEETROCK Gypsum Wallboard shall be used on the inside of all exterior walls. The space beween the back of the SHEETROCK and the wall shall not be filled with wool or other materials.

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*T.M. Reg. U.S. Pat. Off.

RC-1 RESILIENT CHANNEL

DESCRIPTION

The RC-1 Resilient Channel is 2¾" wide made from 25 gauge electro-galvanized steel and is designed for the multi-purpose resilient attachment of SHEETROCK to either wood stud partition framing, wood ceiling joists or wood trussed rafters. The channel is either screw or nail fastened at right angles to the framing members through the punched holes of the attachment flange. The resilient channel is designed for screw attachment of the gypsum wallboard with the 1" or 1⅝" USG Drywall Screw—Type S.

ADVANTAGES

1. Sound Transmission Loss. Tests by recognized sound-testing laboratories on drywall constructions using the RC-1 SHEETROCK Resilient Channel, show a significant improvement in sound transmission loss over wallboard applied directly to wood framing. See Technical Data Table —Sound Transmission Loss Page 00.
2. Fire Resistance. Meets the one-hour fire resistance requirements for walls established by ASTM E 119-55. Tests were conducted at a recognized testing laboratory.*
3. Provides a low cost, fast, labor saving construction incorporating the superior screw attachment method.

RC-1 RESILIENT CHANNEL

RC-1 RESILIENT CHANNEL—SPECIFICATIONS

SCOPE & GENERAL CONDITIONS

See page 00—requirements are the same for those for the DWC Furring Channel and the DWS, USG Metal stud.

MATERIALS

1. Resilient Channels—RC-1 SHEETROCK Resilient Channel.
2. Gypsum Board—(½") (⅝") Tapered Edge SHEETROCK (Regular) (FIRECODE) 48" wide and in lengths as long as practical to minimize the number joints. (½") (⅝") BAX-BORD (Regular) (FIRECODE) Gypsum Backing Board for double layer construction.
3. Corner Bead—Dur-A-Bead, Perf-A-Bead, Econo Corner reinforcement.
4. Fasteners—(1") (1⅝") USG Drywall Screw—Type S for attachment of gypsum wallboard to RC-1 Resilient Channel.
5. Fasteners—1¼" USG Drywall Screw type W, or 5d common nail, for attachment of RC-1 Resilient Channel to wood framing.
6. Wool Batt—THERMAFIBER Insulating Wool Batt 3" x 23" x 96".
7. Metal Trim—(#200A) (#401) (#402) USG Metal Trim.
8. Joint Treatment—PERF-A-TAPE Joint System.
9. Laminating Adhesive—PERF-A-TAPE Compound embedding type.

ERECTION:

1. *Partitions*—RC-1 Resilient Channels, spaced 24" c. to c., are installed horizontally (at right angles to wood framing spaced 16" or 24" c. to c.), with either screw or nail fasteners, providing approximately 1" penetration into the framing member, driven through the punchholes provided in the attachment flange. The resilient channel should be spliced directly over a framing member by simply meeting the channels and fastening both attachment flanges to the stud. At the horizontal ceiling angle the resilient runner at the top of the sidewall should be placed a maximum of 6 inches from the ceiling line with the attachment flange downward and attached to the face of the vertical studs. At the floor line a 3" strip of ½" gypsum board is applied to the partition plate to serve as backing for the gypsum board facing. The first RC-1 Resilient Channel is located 24" up from the floor line. Single layer ½" or ⅝" SHEETROCK gypsum wallboard is screw applied with the long dimension parallel with the resilient channel. The horizontal abutting edges should be centered over the screw flange of the channel. Attach the gypsum board with 1" USG Drywall Screws—Type S spaced at 12 c. to c. along the channels.

The RC-1 Channels shall be extended into all corners and connected to the studs which frame the corners. A maximum 6" cantilever of the channel is permissible.

Where additional layers of gypsum board are required for increased sound transmission loss, erect the face layer with the long dimension at right angles to the long edges of the base layers 1⅝" USG Drywall Screws—Type S may be used for the screw attachment of the face layer spaced 16" c. to c. Base layer shall be attached with 1" USG Drywall Screws—Type S spaced 16" c. to c. Complete adhesive lamination can be eliminated with this system if the resistance to ridging provided by lamination is not desired.

Where 3" THERMAFIBER wool batts are used in the stud cavity for increased sound transmission loss, they shall extend in the stud cavity from floor to ceiling and be pressed in place so that the batt is tight to the back face of one side of the partition. The batts may be securely held in place by stapling to the studs or adhesively cementing them to the back face of one side of the partition.

With the fire rated construction, all vertical butt joints shall be back blocked with minimum 8" strips of ⅜" gypsum board. Joints are reinforced and finished with PERF-A-TAPE Joint System in the prescribed manner.

Ceilings—The RC-1 Resilient Channel, spaced 24" c. to c. is attached at right angles to the ceiling joists.

SHEETROCK Gypsum Wallboard shall be screw applied with the long dimension at right angles to the resilient channel using 1" USG Drywall Screws—Type S spaced 12" c. to c. along the channel. End joints shall either occur at the center of the screw flange or occur midway between channels with the joint floated and back blocked. Joints are reinforced and finished with PERF-A-TAPE Joint System in the prescribed manner.

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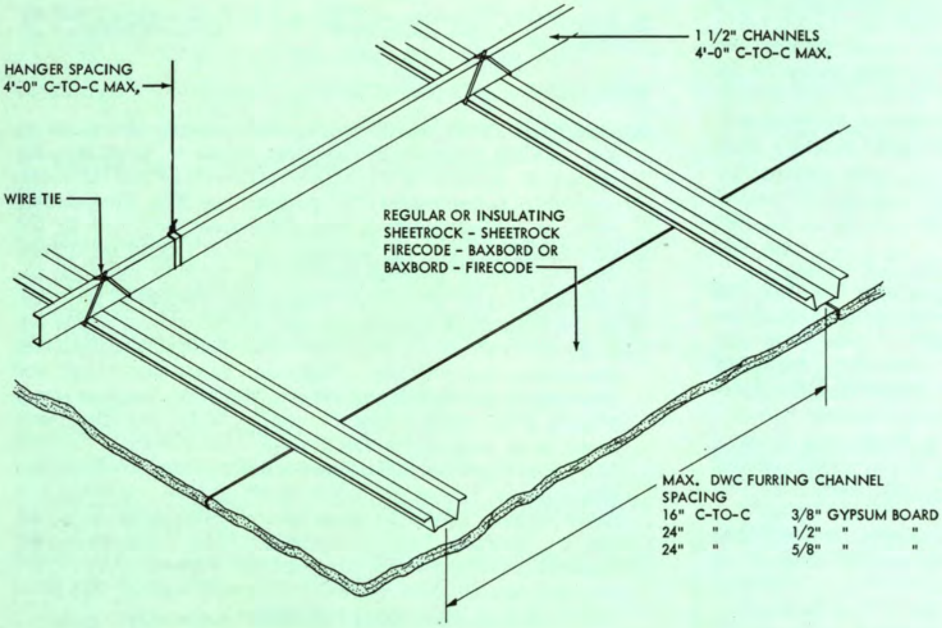
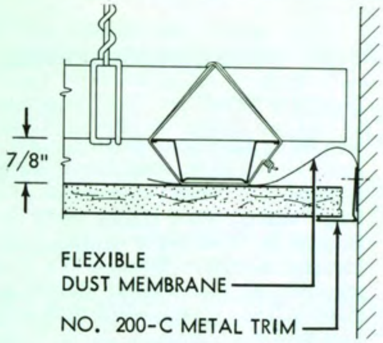
*T.M. Reg. U.S. Pat. Off.

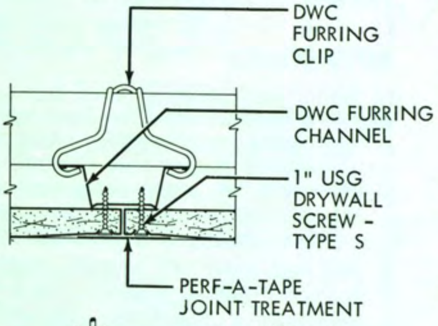
CEILING SYSTEMS— ARCHITECTURAL DETAILS

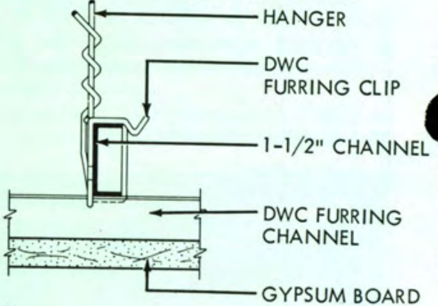
—DWC FURRING CHANNEL

Scale: 3″ = 1′-0″



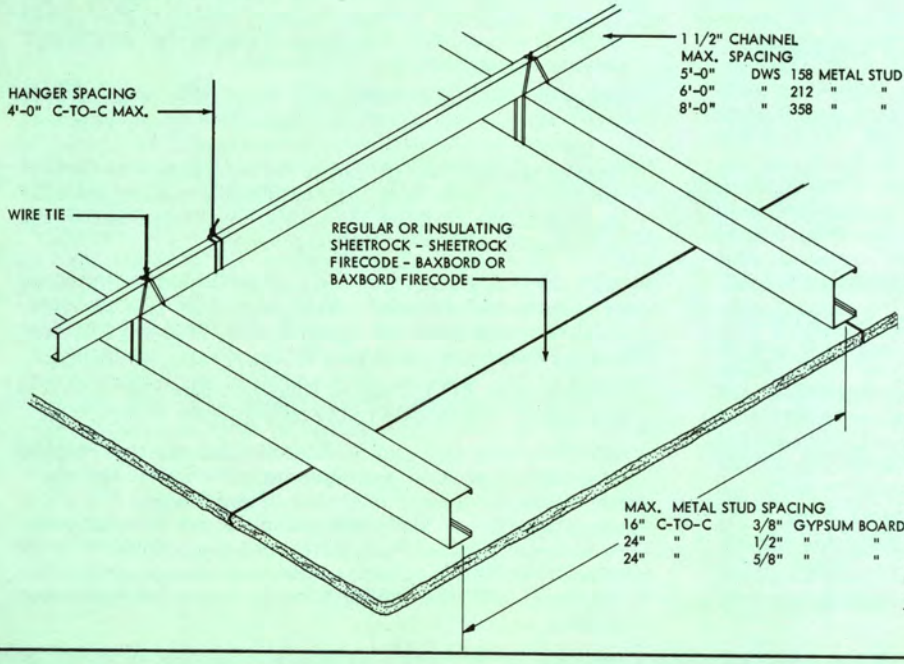


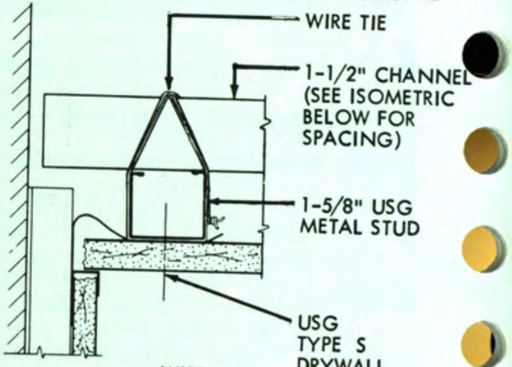


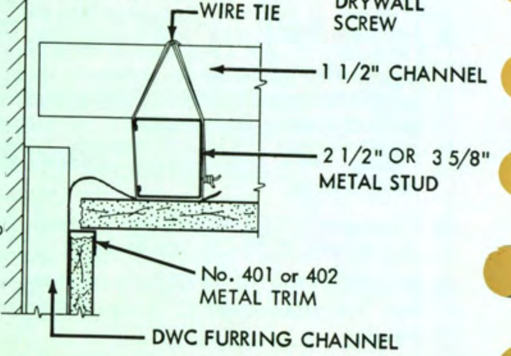


—USG METAL STUD

Scale: 3″ = 1′-0″





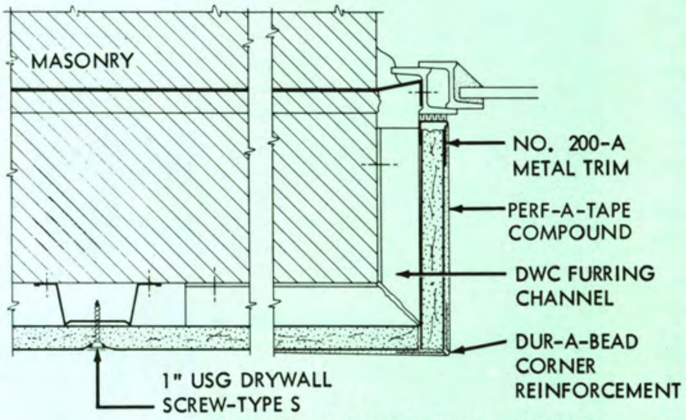


*T. M. Reg. U.S. Pat. Off.

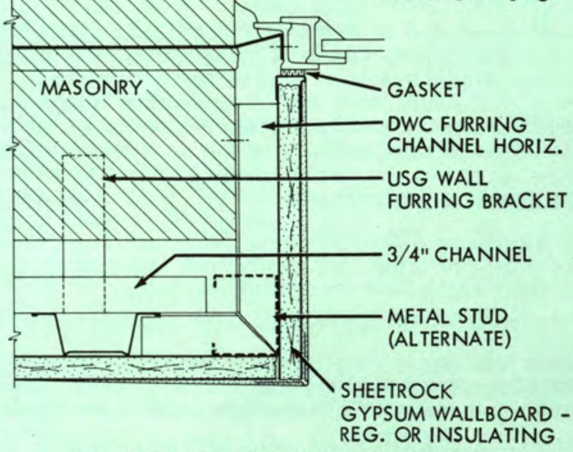
WALL FURRING SYSTEM—ARCHITECTURAL DETAILS

FURRED WALL PLAN SECTIONS

Scale: 3" = 1'-0"

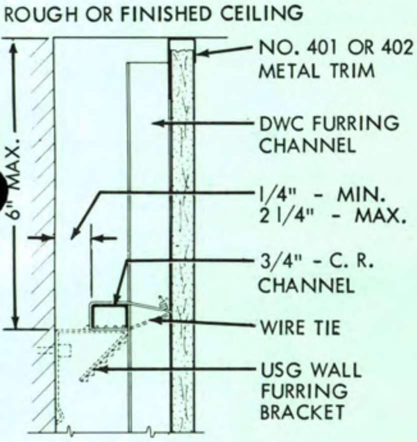


METAL WINDOW—JAMB


MASONRY
GASKET
DWC FURRING CHANNEL HORIZ.
USG WALL FURRING BRACKET
3/4" CHANNEL
METAL STUD (ALTERNATE)
SHEETROCK GYPSUM WALLBOARD - REG. OR INSULATING

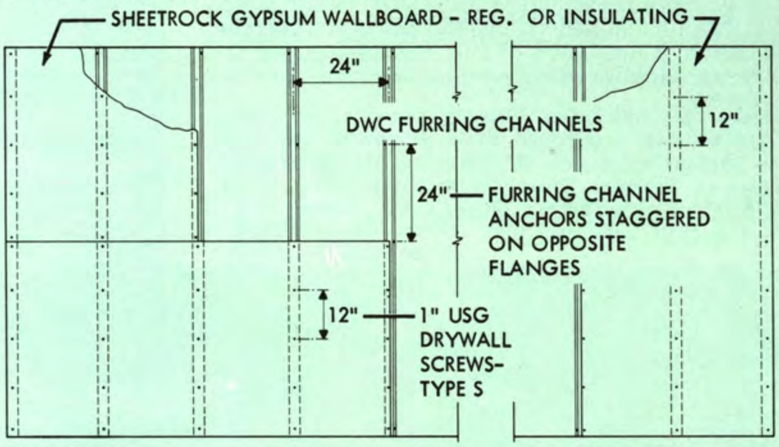
METAL WINDOW—JAMB

CEILING ATTACHMENT



ADJUSTABLE WALL FURRING

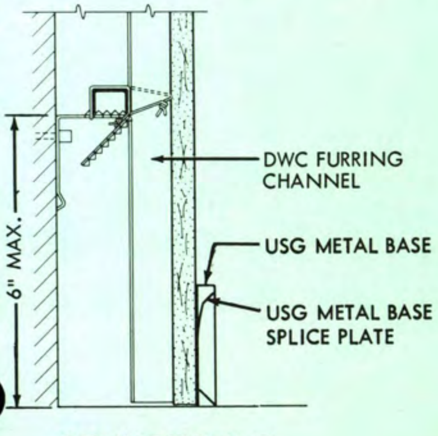
WALL ELEVATION—Scale: ¼" = 1'- 0"


SHEETROCK GYPSUM WALLBOARD - REG. OR INSULATING
24"
DWC FURRING CHANNELS
12"
24"
FURRING CHANNEL ANCHORS STAGGERED ON OPPOSITE FLANGES
12"
1" USG DRYWALL SCREWS-TYPE S

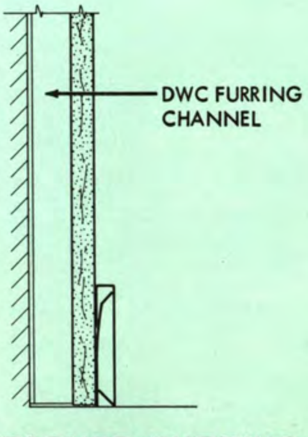
HORIZONTAL APPLICATION

VERTICAL APPLICATION

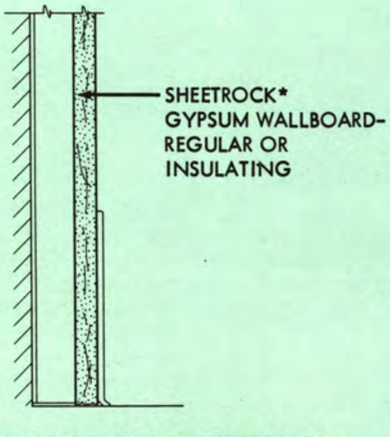
FLOOR ATTACHMENT & BASES



ADJUSTABLE WALL FURRING



ATTACHED FURRING METAL BASE



ATTACHED FURRING RUBBER BASE

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GYPSUM WALLBOARD
FIRE PROTECTION—STEEL COLUMNS

DESCRIPTION

Steel Column fire protection of 2 or 3 hours is afforded by the use of three layers of ⅝" SHEETROCK FIRECODE Gypsum Wallboard held in place by a combination of wire or steel straps, nails and/or screws, metal angles and PERF-A-TAPE Joint Compound. The amount of protection is determined by the combination of these materials.

FUNCTION & UTILITY

Fire Resistance—The following fire endurance ratings have been recorded for protection assemblies by a nationally recognized fire testing laboratory:†

†Detailed test data is available upon request.

2-Hour Fire Rating—Innermost Layer—⅝" SHEETROCK FIRECODE erected vertically and held in place with 4d annular ring nails (GWB 54 nails) spaced as required.

Center Layer—Same construction as innermost layer with metal angles and straps added. 1¼" x 1¼" x .021" x column length electro-galvanized metal angles positioned at each corner and held in place by ½" x .014" steel strapping spaced a maximum of 2'6" apart, with a strap located at column mid-height. The top and bottom straps shall be located a maximum of 1'6" from slab constructions. Straps are applied with stretching and binding tools.

Face Layer—⅝" SHEETROCK FIRECODE erected vertically with DUR-A-BEAD positioned at each corner and fastened to the metal angles of the center layer with 1" USG Drywall Screws—Type "S" spaced 12" c. to c. Corners finished with PERF-A-TAPE Joint System.

3-Hour Fire Rating—Innermost Layer—⅝" SHEETROCK FIRECODE erected vertically with DUR-A-BEAD positioned at each corner and held in place by double strand, 18 gauge, tie-wire spaced a maximum of 1'9" apart, with a tie-wire strand located at column mid-height. The top and bottom tie-wire strands shall be located a maximum of 6" from the slab constructions.

Center Layer—⅝" SHEETROCK FIRECODE laminated to innermost layer with PERF-A-TAPE Joint Compound (embedding type). DUR-A-BEAD positioned at each corner and fastened with 1" USG Drywall Screws—Type "S" spaced 12" c. to c. and double strand, 18 gauge, tie-wire spaced as indicated for the innermost layer.

Face Layer—Same construction as center layer with tie-wire omitted. Corners finished with PERF-A-TAPE Joint System.

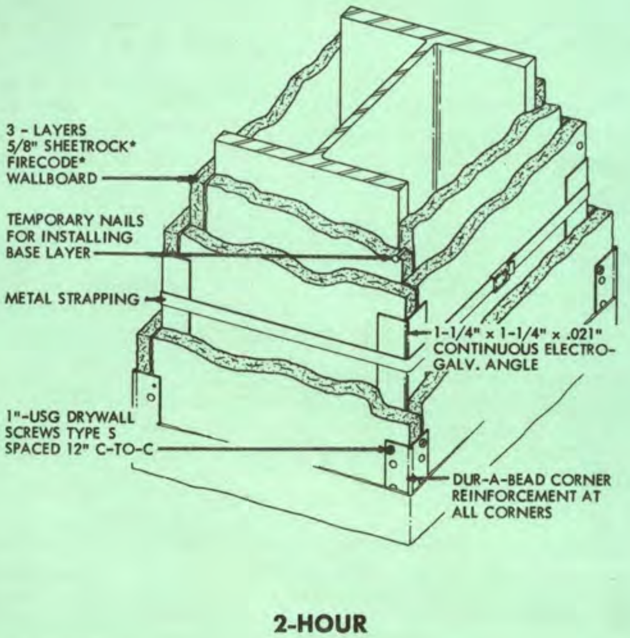
Adaptability—SHEETROCK FIRECODE gypsum wallboard for steel column fire protection is easily and quickly installed in one continuous operation. No interruption during construction is necessary for adhesives to dry.

Economy—Low material cost, speed of erection and minimum number of components provide realistic and competitive construction costs.

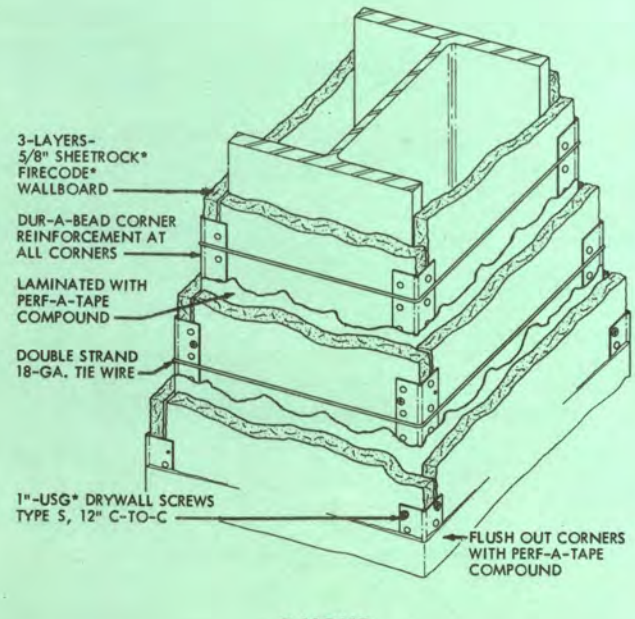
LIMITATION

The construction should not be used where normally exposed to excessive moisture or humidity.

GYPSUM DRYWALL COLUMN FIRE PROTECTION



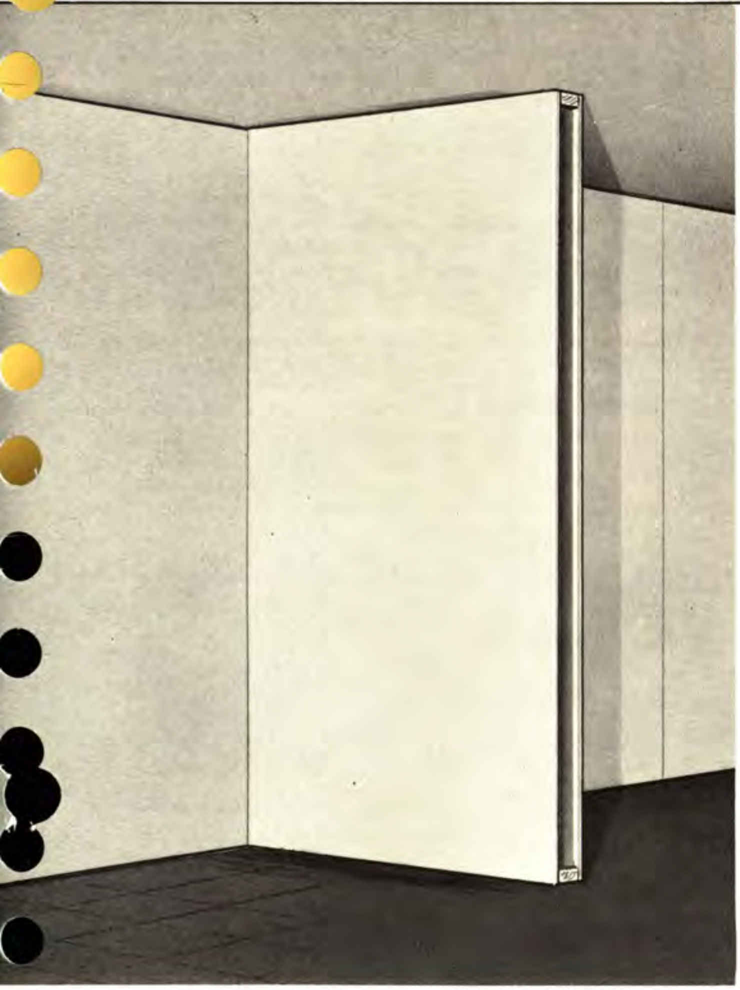
2-HOUR



3-HOUR

*T.M. Reg. U.S. Pat. Off.

STRUCTICORE*
PARTITION PANELS



DESCRIPTION

The STRUCTICORE Partition Panel System is a non-load bearing interior partition designed primarily for residential use. It consists of light weight panels, 3¼″ thick, 4′ wide, standard 8′-0″ high, faced on both sides with ⅜″ tapered edge SHEETROCK* Gypsum Wallboard. The panel includes mill installed 1⅝″ by 2½″ wide, top and bottom wood panel plates and separate cylindrical splines for joining the vertical edges.

STRUCTICORE partition panels are erected after subfloors, load bearing walls, plumbing partitions, etc., are installed and preferably, after the SHEETROCK has been applied to exterior walls and ceilings. USG Joint Stabilizing Compound used at panel joints, adhesively welds the individual panels together to minimize joint ridging. Panel joints and intersections with wall and ceiling SHEETROCK are reinforced and concealed in the normal manner with PERF-A-TAPE* Joint Systems.

FUNCTION AND UTILITY

SIMPLIFIED ERECTION

STRUCTICORE Panels are ready for erection on delivery to the job site. The panels are complete partition units with facings of ⅜″ tapered edge SHEETROCK Gypsum Wallboard adhesively attached to vertical 2½″ diameter fiber column cores. Mill installed top and bottom plates (1⅝″ x 2½″, kiln dried) provide dependable attachment to floor and ceiling.

There are no studs to saw, straighten, or splice. There are no end joints in panel faces. The simplified spline joint eliminates nailing at panel joints. No nailing is required in the panel field. Vertical column cores provide electric wiring chase where desired.

STRENGTH

STRUCTICORE Partition Panel core consists of a series of fiber columns (2½″ O.D.), each running full panel height and abutting adjacent columns. SHEETROCK Gypsum Wallboard panel faces are adhesively and continuously attached to all core members and are thus supported every 2½″ o.c. (compared to 16″ or 24″ o.c. conventional framing). This gives STRUCTICORE Panels strength, rigidity, and high impact resistance. At panel joints USG Joint Stabilizing Compound adhesively welds the panels together. Full length splines provide continuity of partition core.

REDUCED IMPACT NOISE

The closely spaced fiber column cores add solidity to STRUCTICORE panels, reduce impact noise and impart a feeling of substance.

LIMITATIONS OF USE

1. The STRUCTICORE Partition Panel System is designed for use only as a non-load bearing interior partition.
2. Panels shall be protected against wetting and damage to the facings and edges during shipping, handling and installation.
3. Partitions shall not be used where directly exposed to excessive moisture or humidity. Partitions may be used in shower stalls and bathtub enclosures, when adequate surface protection against direct exposure is provided.

SPECIFICATIONS

GENERAL CONDITIONS

In cold weather, the building shall be heated well in advance of, and during, the entire STRUCTICORE Partition Panel installation and joint treatment operation. A minimum temperature of 55°F. is required at all times until Joint Finishing and Stabilizing Compounds are dry. Ventilation shall be provided to eliminate excessive moisture.

All materials as specified shall be stored in a place protected from exposure to the elements and from damage by tampering and used in strict accordance with manufacturer's directions.

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*T. M. Reg. U. S. Pat. Off.

STRUCTICORE

PARTITION PANELS—TECHNICAL INFORMATION

MATERIALS

Manufactured by United States Gypsum Company

STRUCTICORE Partition Panels
STRUCTICORE Panel Splines
DUR-A-BEAD* Corner Reinforcement
PERF-A-TAPE* All Purpose Ready Mixed Compound
PERF-A-TAPE* Reinforcing Tape
USG® Joint Stabilizing Compound

SYSTEM ACCESSORIES

3¼″ wide wood floor runners (for concrete floors only)
¾″ x 2½″ wood header blocks, partition terminals, cleats, and certain jamb strips.
1⅝″ x 2½″ wood lintel blocks and certain jamb strips
Wood shingles
8d and 10d casing nails
6d box nails
USG® Drywall Screws, Type W
GWB-54 gypsum wallboard nails
No. 8, 2″ and 2¾″ long standard wood screws
Carpenters glue
Electric boxes, such as, RACO "Griptite"
Wood, metal or composition base trim, wood door frames and trim and metal door frames.

ERECTION

Layout—Chalk lines indicating partition runs shall be accurately struck at floor and ceiling. All openings shall be accurately indicated.

Floor Runner—When installing STRUCTICORE Partition Panels on concrete floors, separate floor runners are required. They shall be accurately positioned to floor chalk lines and securely anchored with suitable fasteners spaced not more than 24″ o.c.

Panel Placement—Panels shall be set to floor chalk line or floor runner, shimmed up, aligned with ceiling chalk line, then nailed as specified under "Fastening". A full length spline shall be positioned in the open edge of the panel just installed. A bead of USG Joint Stabilizing Compound shall be extruded with a caulking gun along the full length of the angle formed by the panel face and spline on each side of panel. The next panel shall be fitted over the spline, edges butted to the last panel installed, shimmed up to the ceiling and nailed. This procedure is repeated until a partition corner, wall or opening is encountered. Any excess Stabilizing Compound on panel faces shall be removed before it hardens.

Details (See Architectural Details)

Panel Intersection, exterior walls, gypsum wallboard installed—Panels butting gypsum wallboard faced exterior walls shall be fitted at panel mid-height over a wood cleat ¾″ x 2½″ x 12″ long secured to exterior wall blocking, and shall be fastened at top and bottom panel plates with 10d casing nails. Interior corners shall be finished with PERF-A-TAPE* Joint Reinforcing System.

Panel Intersection, exterior walls, *gypsum wallboard* **not** *installed*—Panels abutting exterior wall framing shall be secured at top and bottom panel plates with 10d casing nails. SHEETROCK* Gypsum Wallboard applied to exterior walls shall be closely butted to the partition panels. Interior corners shall be finished with PERF-A-TAPE Joint Reinforcing System.

Panel Intersection, interior partition panels—Panels shall be fastened at top and bottom panel plates with 10d casing nails. Interior corners shall be finished with PERF-A-TAPE Joint Reinforcing System.

Corner Detail—The "corner cut" panel shall be made by removing a section of panel 3¼″ wide, taking care to leave the exterior corner panel face intact. The "inside" panel shall be cut ⅜″ short of the partition line. Then a ¾″ x 2½″ full length jamb strip shall be inserted and fastened. The "corner cut" panel shall be installed first. Then the "inside" panel shall be fitted into the "corner cut" panel, shimmed up to the ceiling and nailed. Exterior corner panel face shall be fastened to the jamb strip of the "inside" corner panel with GWB-54 nails. Exterior angle shall be reinforced with DUR-A-BEAD* Corner Reinforcement and finished flush with PERF-A-TAPE all purpose ready mixed Compound.

Partition Terminal—A full length, ¾″x 2½″ wood member shall be inserted into core space then fastened to partition faces and covered with ⅜″ thick SHEETROCK. External angles shall be reinforced with DUR-A-BEAD Corner Reinforcement and finished flush with PERF-A-TAPE Compound

Door Headers, gypsum wallboard ceiling installed—Door headers, with fiber columns horizontal, shall be cut to height and length required. Fiber columns at each end of the header panel shall be recessed ¾″. The bottom of the header panel shall have a continuous 1⅝″ x 2½″ lintel block inserted flush in core space. Header panel shall be pushed upward and slipped over header blocks, butted to ceiling and fastened as specified under "Fastening". Interior corners shall be finished with PERF-A-TAPE Joint Reinforcing System.

When door headers are over 4′-0″ in width, they shall be fastened, as above, plus a ¾″ x 2½″ x 12″ long cleat shall be nailed to the ceiling. The top, open edge, of the door header shall be fitted over this cleat.

Door Headers, gypsum wallboard ceiling *not* installed—Door header panels shall be installed as described in the preceding paragraph and secured at ceiling line by butting the ceiling SHEETROCK Gypsum Wallboard to the header panel. Wood cleats are not required.

FASTENING

Floor runners (required for concrete floors) shall be securely fastened 24″ o.c. maximum.

Panels shall be fastened to floors and ceiling framing by nailing through the exposed (trailing) ends of panel plates and toe-nailing at panel mid-point through both faces into floor and ceiling. No nailing is required at the leading edge of a panel engaging the spline of a succeeding panel. Fasteners shall be 10d casing nails spaced a maximum of 24″ o.c.

Header blocks shall be nailed to jamb strips with a minimum of 4, 6d box nails.

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Lintel blocks shall be toe-nailed to header blocks with a minimum of 4, 8d casing nails.

Jamb strips, header blocks, lintel blocks, terminal inserts, etc., shall be fastened to SHEETROCK panel faces with either USG Drywall Screws Type W, spaced 12″ o.c. maximum or with GWB-54 gypsum wallboard nails spaced 8″ o.c. maximum.

Jamb strips, 1⅝″ thick, located in the field of the panel, shall be fastened with five (5) No. 8, 2¾″ long standard wood screws and two continuous beads of carpenters glue.

Shelf cleats shall be fastened with No. 8, 2″ long standard wood screws 8″ o.c. maximum and two continuous beads of carpenters glue. (Not for wall-hung cabinet attachments.)

Bath and Kitchen accessories (towel bars, etc.) are fastened in the normal manner or shall be secured with Molly type bolts.

CUTTING

Panels should be cut on a power table saw or may be cut with either standard hand or power saws. Power saws must have a 10″ diameter blade to cut through the 3¼″ thick panel in one pass. Use of a dust collector is recommended.

Fiber columns and splines can be hand-cut with a standard gypsum wallboard knife.

PHYSICAL PROPERTIES

Size: 4′ x 8′

Thickness: 3¼″

Panel Plates: 1⅝″ thick x 2½″ wide

Fiber Columns (Core) Diam.: 2½″ O.D.

Panel Weight: Approximately 123 pounds

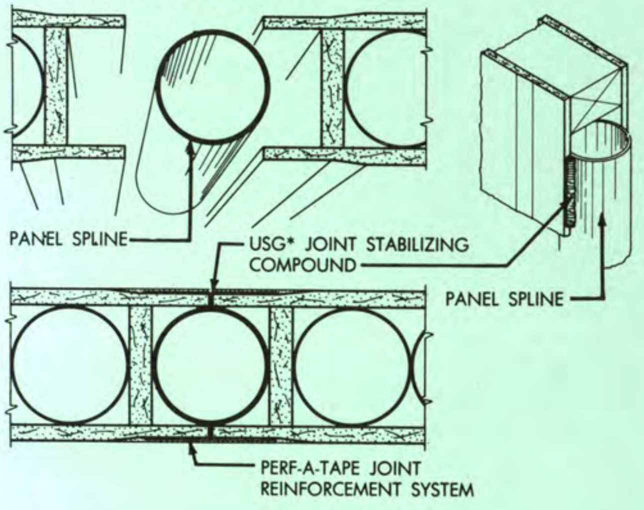
Facings: ⅜″ Tapered Edge SHEETROCK* Gypsum Wallboard

Panel Splines: 2½″ O.D. fiber columns

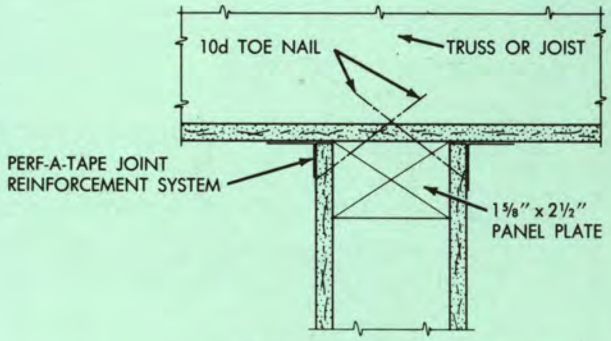
ARCHITECTURAL DETAILS

Scale: 3″ = 1′-0″

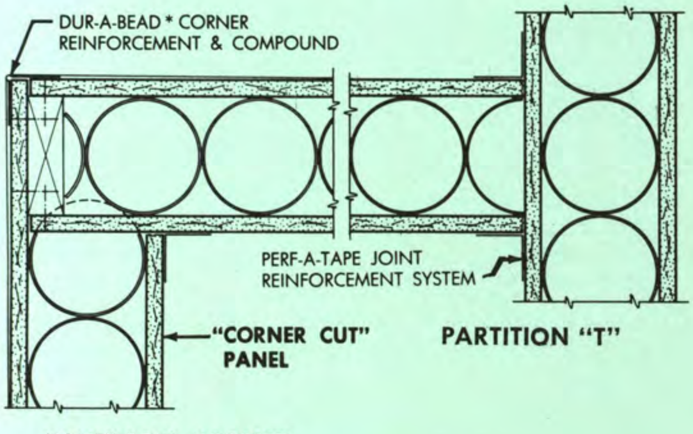
WALL PLAN SECTIONS


PANEL SPLINE
USG* JOINT STABILIZING COMPOUND
PANEL SPLINE
PERF-A-TAPE JOINT REINFORCEMENT SYSTEM

PANEL JOINT DETAIL

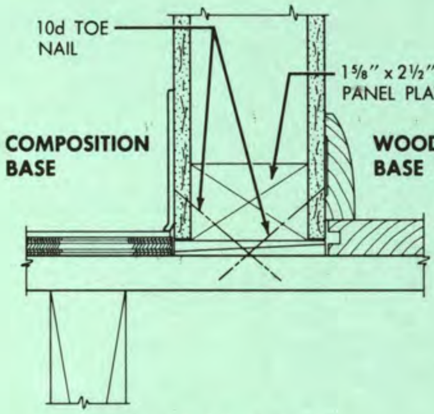


CEILING—ACROSS JOIST


DUR-A-BEAD* CORNER REINFORCEMENT & COMPOUND
PERF-A-TAPE JOINT REINFORCEMENT SYSTEM
"CORNER CUT" PANEL

PARTITION "T"

PARTITION CORNER



FLOOR DETAIL

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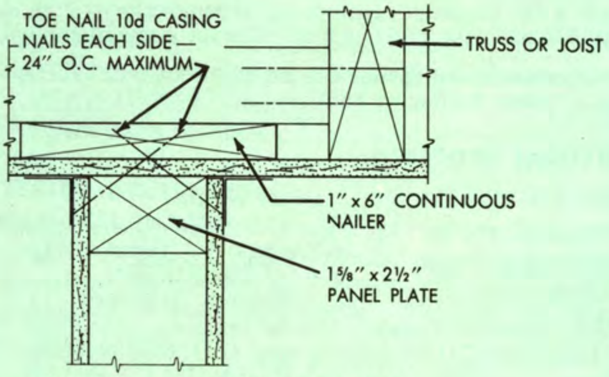
STRUCTICORE PARTITION PANELS

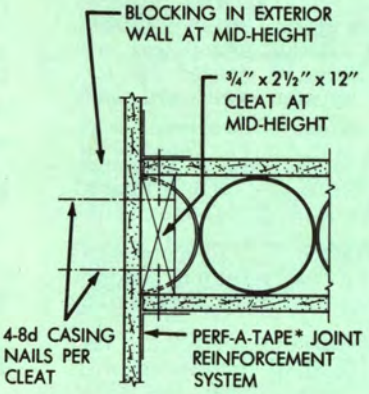
SHEETROCK GYPSUM WALLBOARD AND GYPSUM DRYWALL SYSTEMS

ARCHITECTURAL DETAILS

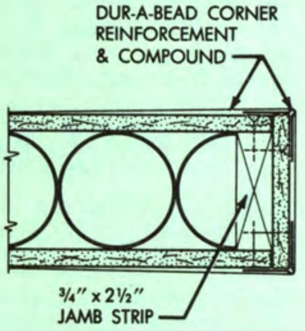
Scale: 3″ = 1′-0″


TOE NAIL 10d CASING NAILS EACH SIDE — 24″ O.C. MAXIMUM
TRUSS OR JOIST
1″ x 6″ CONTINUOUS NAILER
1⅝″ x 2½″ PANEL PLATE

CEILING—PARALLEL TO JOIST

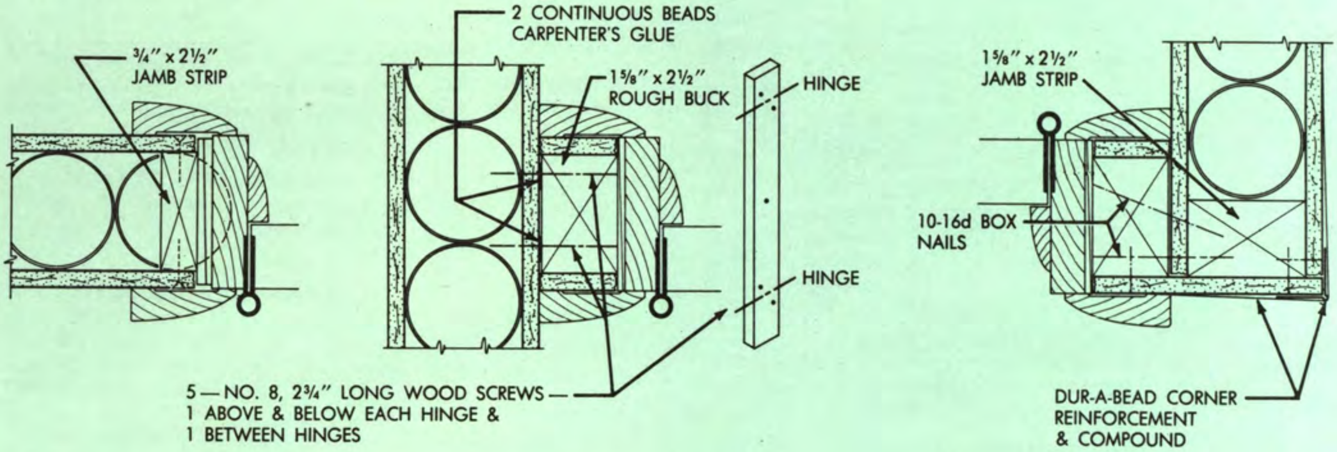

BLOCKING IN EXTERIOR WALL AT MID-HEIGHT
¾″ x 2½″ x 12″ CLEAT AT MID-HEIGHT
4-8d CASING NAILS PER CLEAT
PERF-A-TAPE* JOINT REINFORCEMENT SYSTEM

EXTERIOR WALL JUNCTION



PARTITION TERMINAL

DOOR FRAMES


¾″ x 2½″ JAMB STRIP
2 CONTINUOUS BEADS CARPENTER'S GLUE
1⅝″ x 2½″ ROUGH BUCK
HINGE
HINGE
5 — NO. 8, 2¾″ LONG WOOD SCREWS — 1 ABOVE & BELOW EACH HINGE & 1 BETWEEN HINGES
1⅝″ x 2½″ JAMB STRIP
10-16d BOX NAILS
DUR-A-BEAD CORNER REINFORCEMENT & COMPOUND

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A.I.A. File 35-H-6

TECHNICAL INFORMATION

VAUGHAN WALLS*

MOVABLE GYPSUM DRYWALL PARTITIONS

UNITED STATES GYPSUM

1963

*Trademark of Vaughan Interior Walls, Inc.

A.I.A. File 35-H-6

VAUGHAN WALLS
MOVABLE GYPSUM PARTITIONS

DESCRIPTION

Movable VAUGHAN WALLS are non-load-bearing movable partitions consisting of two basic components; modular gypsum panels, floor and ceiling runners. Special USG® gypsum wallboard panels are laminated into 2¼″ thick units requiring no studs or intermediate posts. This system has fewer component parts than other movable walls. It fits any height requirement from less than ceiling height to 14′ maximum height ceilings, and combines with a wide variety of materials; glass, wood, plastic and decorative metals for unlimited architectural expression.

BASIC PARTITION COMPONENTS

1. **VAUGHAN WALLS Panels** consists of three layers of gypsum wallboard—two ⅝″ face panels laminated to a 1″ core. The simple modular designed panels are laminated to form tongue and groove edges. All face panels are mill fabricated with beveled longitudinal edges.
2. **Steel or Aluminum**
   a. Metal components such as floor or ceiling runners, closure plates, door or borrowed light frames, etc., are available in extruded aluminum. All exposed aluminum members are etched and anodized to provide a neutral satin gray finish that requires little maintenance.
   b. Floor runners and door frames are also available in steel. The steel components are shop-primed ready for final painting decoration.
   c. Doors or borrowed lights can be located at almost any point desired by fitting them into openings cut in the panels.
3. **Finishing & Accessories**
   a. Internal corners and intersection reinforcement consists of PERF-A-TAPE* Joint System where flush finishing is desired or metal trim is not specified. External corners are protected with DURA-A-BEAD and finished flush with joint compound for lasting protection.
   b. Foam type polyethylene or similar gaskets are used as a seal between all ceiling runners and ceiling surfaces or elsewhere as required by job conditions.

Simple to Relocate or Modify

Movable VAUGHAN WALLS move in minutes. With closure plates unfastened, panels are quickly removed. No studs to dismantle. Doors and windows may be quickly added or removed from existing walls without disturbing adjacent panels. Through simplicity of design, Movable VAUGHAN WALLS are nearly 100% salvageable and outstandingly economical for use in existing or new construction.

AUTHORIZED ERECTORS

Dependable contractors are carefully selected and trained as authorized Erectors of Movable VAUGHAN WALLS by Vaughan Interior Walls, Inc. Their qualified services include assistance in architectural detailing, original installations and future relocation of partitions to suit changing space requirements.

TECHNICAL SERVICE

U.S.G. maintains offices in all major cities throughout the United States, staffed with personnel prepared to provide information or assistance without obligation. Supplementing these representatives, the U.S.G. Architect Service Department is available to assist the architect or engineer.

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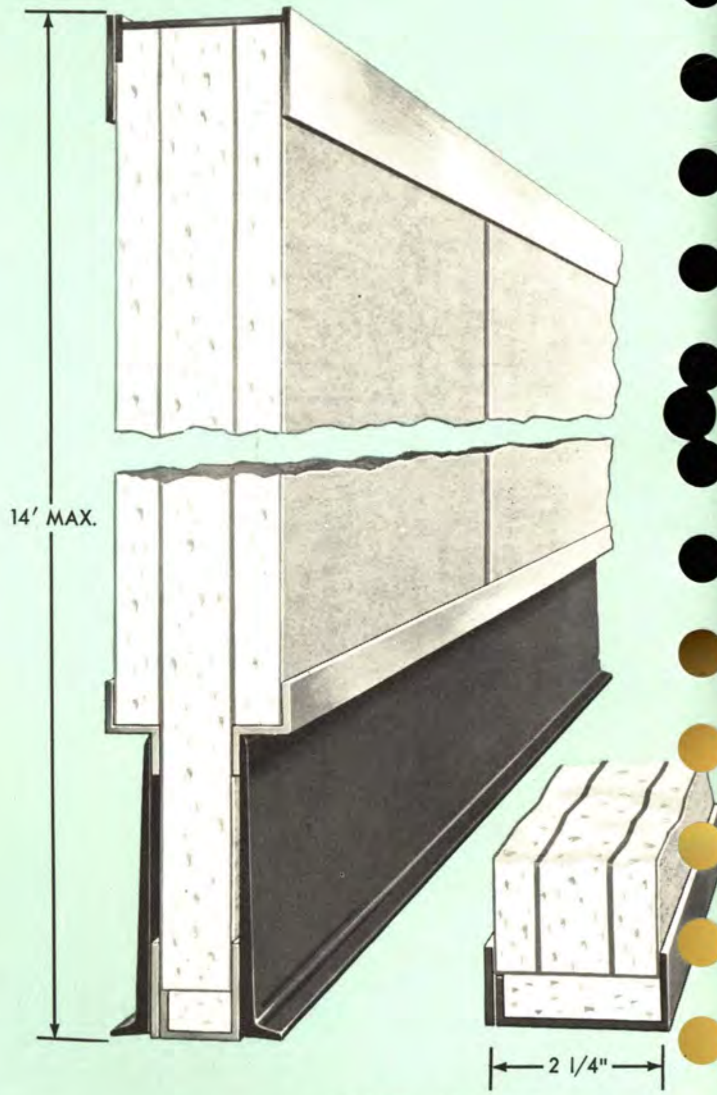
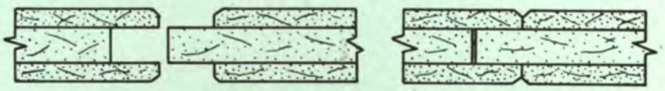
- One hour fire rating
- 37 decibel sound transmission loss
- 14′ maximum height
- 2¼″ thick gypsum drywall
- Weight 10.4-lbs/sq. ft.
- 24″ modular panels
- Laminated from locally stocked materials
- Steel or aluminum trim
- Almost 100% salvageable



PANEL JOINT DETAIL



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*T.M. Reg. U.S. Pat. Off.

FUNCTION & UTILITY

ADAPTABILITY—Vaughan Walls may be used in new construction or for modernizing old buildings. They form any partition less than ceiling high or ceiling height and offer complete flexibility in locating glazed panels and doorways. They require no expansion or control joints.

INCOMBUSTIBILITY—Movable Vaughan Walls consist of aluminum and steel components, and gypsum wallboard . . . recognized fire resistant material.

FIRE RESISTANCE RATING—Vaughan Walls with USG* Gypsum Wallboard have successfully passed one-hour fire resistance tests conducted by a nationally recognized laboratory.

IMPACT NOISE—The 2¼″ of solid gypsum gives Movable Vaughan Walls a feeling and sound of substance and permanence.

SOUND TRANSMISSION LOSS RATINGS—The sound transmission loss rating of Vaughan Walls as normally constructed is better than that possible to obtain in most movable partitions without costly modifications. Special Vaughan Wall constructions will obtain substantially increased sound transmission loss values. If values in this range are required, the details can be provided by a United States Gypsum Company Architect Service Representative or a Vaughan Walls Authorized Erector.

ECONOMY—Tailor-made Movable Vaughan Walls are laminated from locally stocked materials. That is why unexpected job problems or changes in layout are easily handled without costly delays in job progress. This partition is easily and speedily erected permitting early occupancy and a saving in erection labor. Vaughan Walls are readily adaptable to the changing needs of area layout and are nearly 100% salvageable.

ELECTRICAL WIRING—The one-inch core of the panel is routed during the job-lamination process to accept electrical wiring and outlet boxes. This permits flexibility in location of all utility and service requirements. Electrical outlets may be positioned anywhere in the panel for maximum convenience to the user.

FIXTURE ATTACHMENT—The Vaughan Wall is structurally sufficient to support light and heavy duty fixtures such as cabinets, book shelves, etc. The maximum allowable load (Direct Withdrawal) per anchor for commonly used anchors in Vaughan Wall is:

a. ¼″ Elevator Bolt (min. ¾″ head diameter)—100-lbs.
b. 1″—No. 8 Sheet Metal Screw, driven through the face panel into a minimum 4″ x 4″, 24-gauge sheet metal plate; (Laminated between core and face layer)—50-lbs.
c. 2″—No. 10 Sheet Metal Screw, hand driven to avoid stripping panel core and surface paper—25-lbs. (Metal Plate not required)

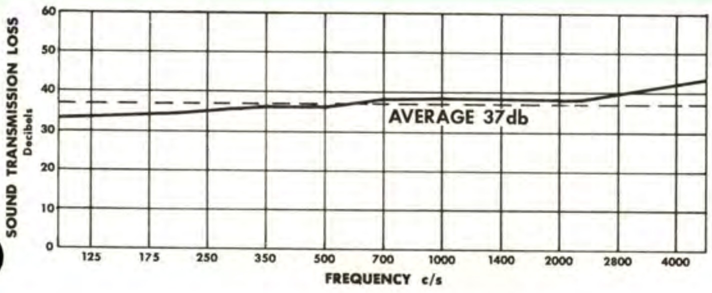
The total allowable withdrawal load (Load Perpendicular) per 2′ wide Vaughan Wall Panel—100-lbs., max.

APPEARANCE—Aluminum trim gives a pleasing accent to partition perimeters when panels are decorated. Steel trim can easily be painted to match, harmonize or contrast with the final finish selected for the panels. Mounted Wood Veneers or Plywood Panels can be adhesively applied for special effects.

LIMITATIONS

1. Vaughan Walls are intended to be used only as non-load-bearing walls.
2. Maximum height is 14′ *(1)*.
3. Maximum unsupported run for less than ceiling height partition is 14′.
4. They should not be used where normally exposed to excessive moisture or humidity.
5. Floor anchor spacing of bank rail partition not to exceed 8′-0″ on centers.

The chart below is based on sound rating tests conducted by a nationally recognized laboratory in 1959. This laboratory advises that average results of tests after December 1956 were approximately 5 db lower than results prior to 1956 and this 5 db adjustment should be made when comparing their ratings.



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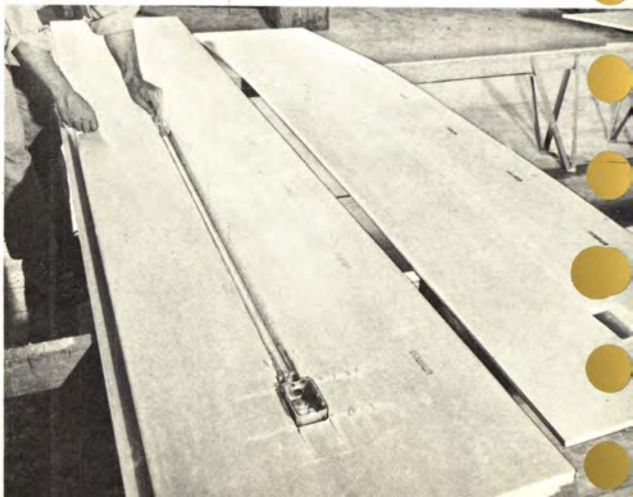
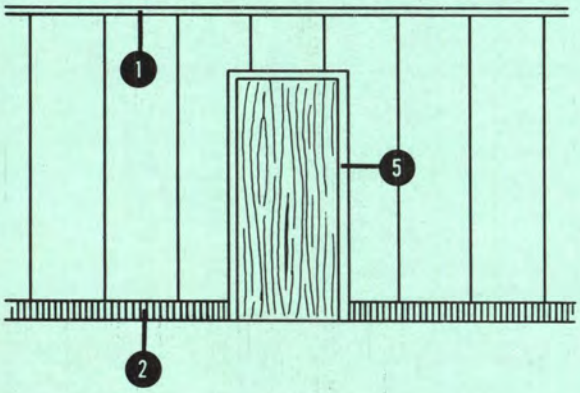
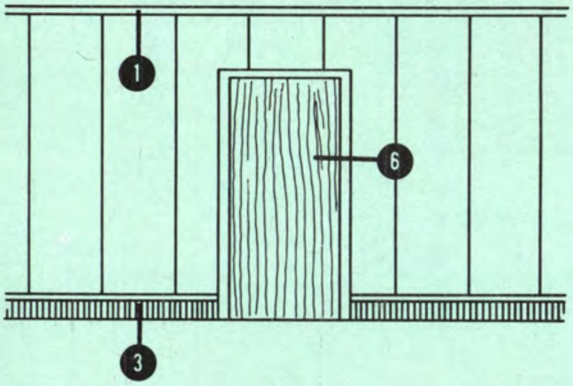
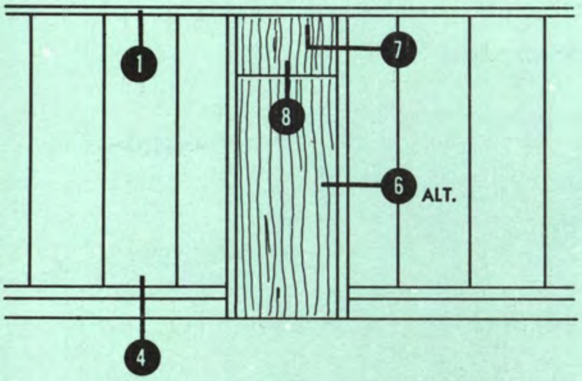
(1) WHEN THE RIGIDITY of a permanent partition is desired, maximum height shall be 10′, and perimeter restraint must be provided.

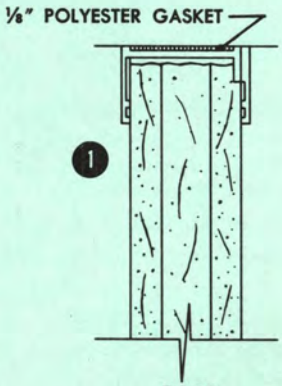


ELEVATIONS Scale: 3/16"=1'—0"
SECTIONS Scale: 3"=1'—0"


CEILING HEIGHT—SOLID PANELS


CEILING HEIGHT—SOLID PANELS


CEILING HEIGHT—SOLID PANELS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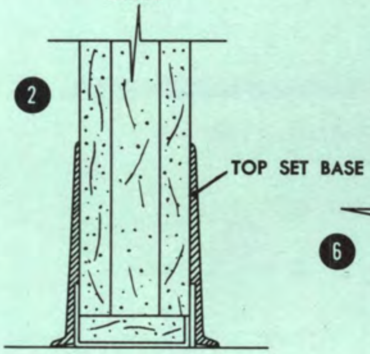
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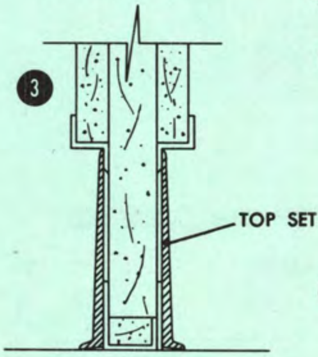
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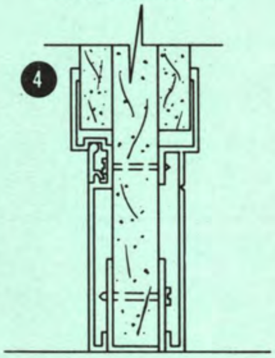
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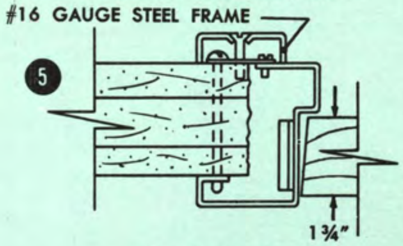
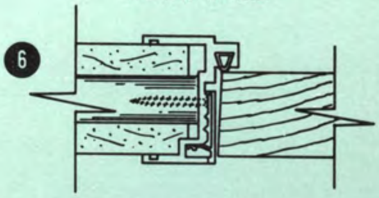
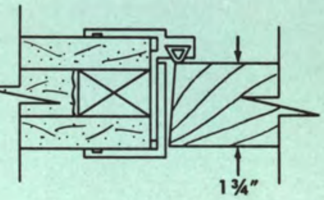
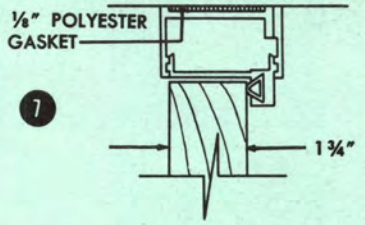

DOOR JAMB-STEEL


DOOR JAMB


DOOR JAMB ALT.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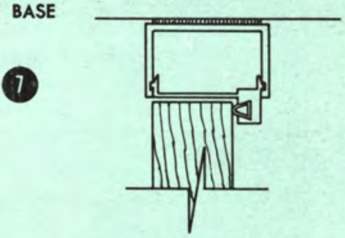
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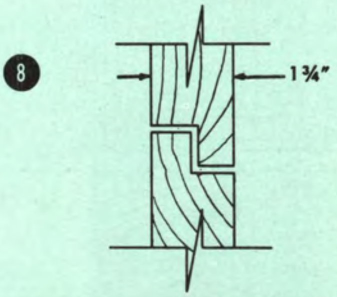
DOOR HEAD

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*T. M. Reg. U. S. Pat. Off.

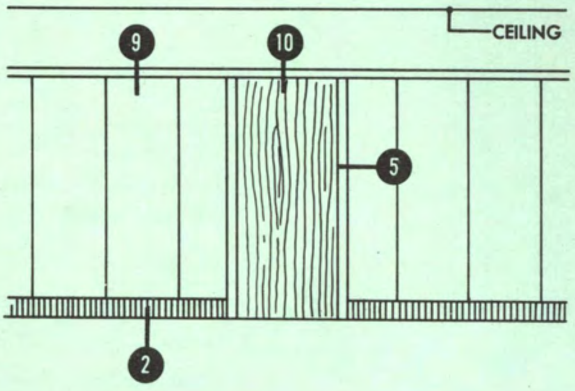
UNITED STATES GYPSUM

VAUGHAN WALLS

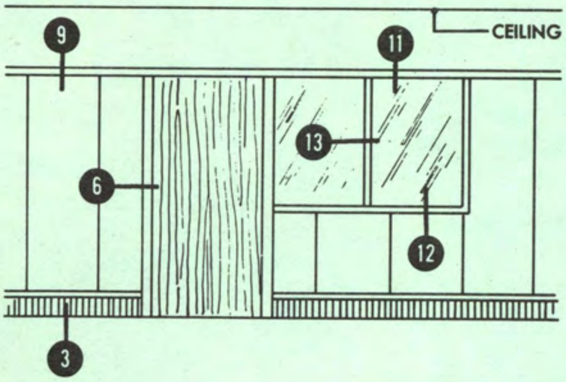
MOVABLE GYPSUM DRYWALL PARTITIONS

ELEVATIONS Scale: 3/16"=1'—0"
SECTIONS Scale: 3"=1'—0"

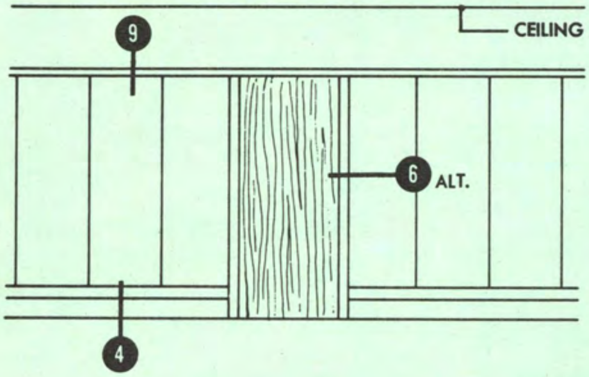
CORNICE HEIGHT



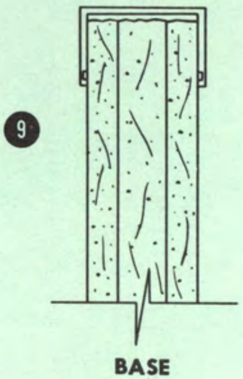
CORNICE HEIGHT—GLAZED



CORNICE HEIGHT



CORNICE CAP



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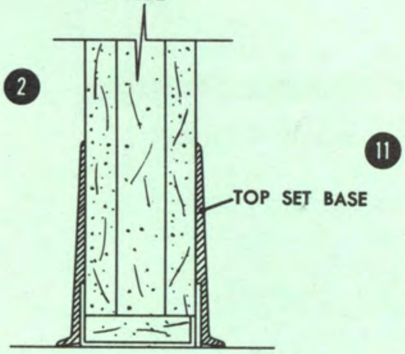

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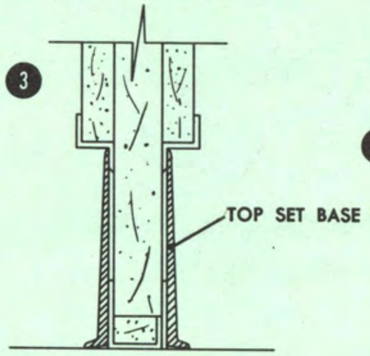

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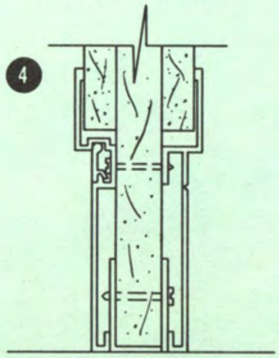
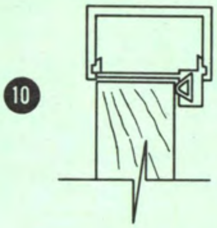
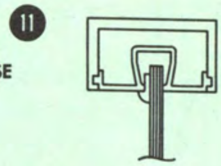


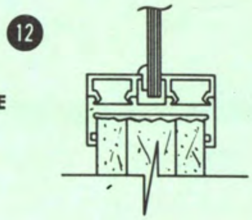
CORNICE CAP DOOR HEAD



CORNICE CAP WINDOW HEAD



WINDOW SILL



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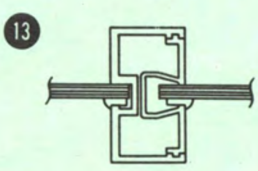
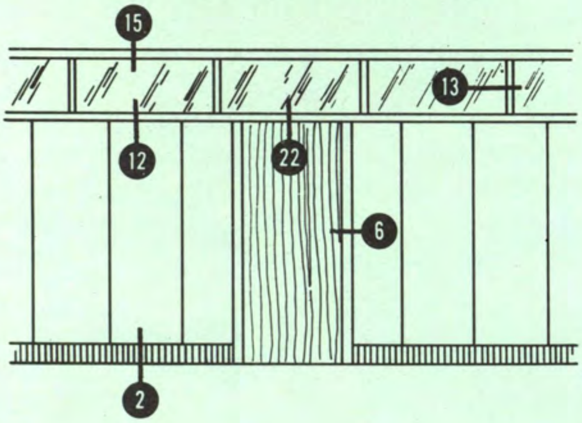


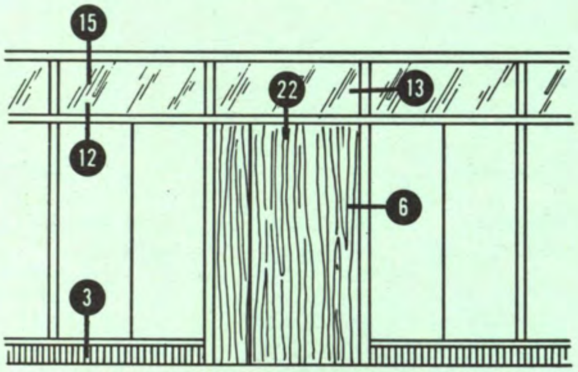
*T.M. Reg. U.S. Pat. Off

ELEVATIONS Scale: 3/16″=1′–0″
SECTIONS Scale: 3″=1′–0″

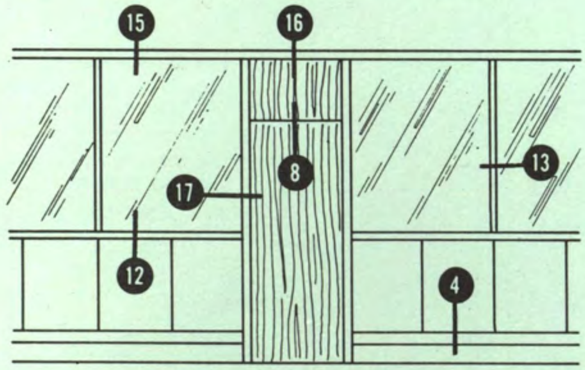
CORNICE HEIGHT—GLAZED FILLER



CORNICE HEIGHT—GLAZED FILLER



WAINSCOT—GLAZED HEIGHT



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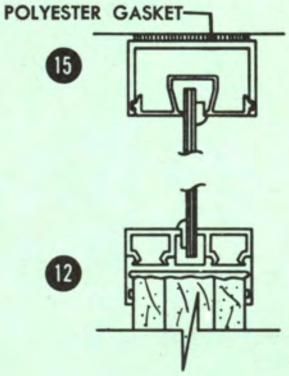

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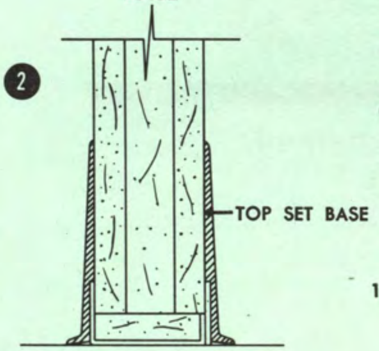

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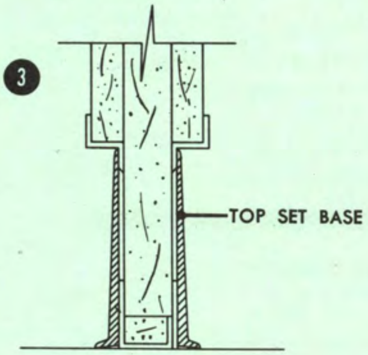

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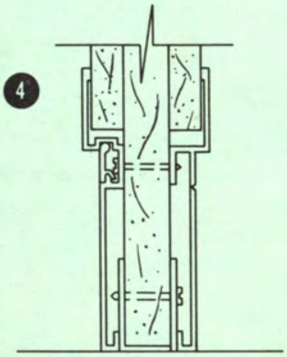

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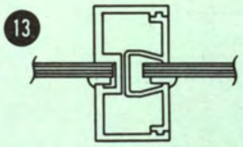

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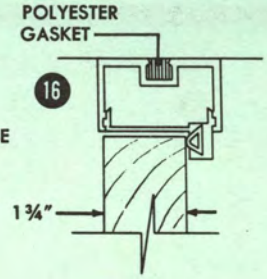

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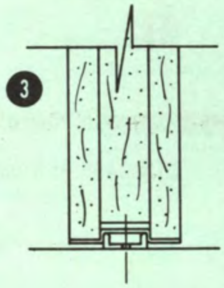
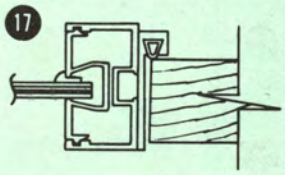




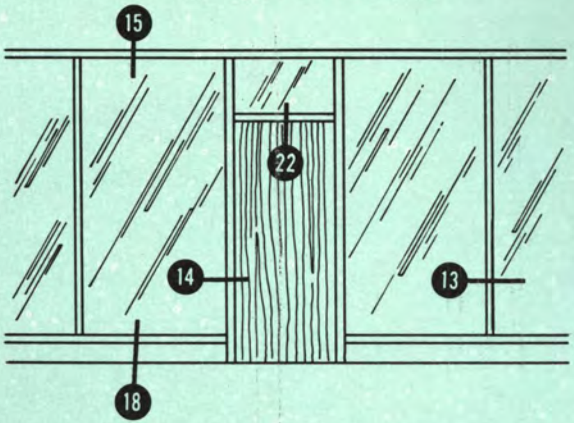
*T. M. Reg. U.S. Pat. Off.

VAUGHAN WALLS

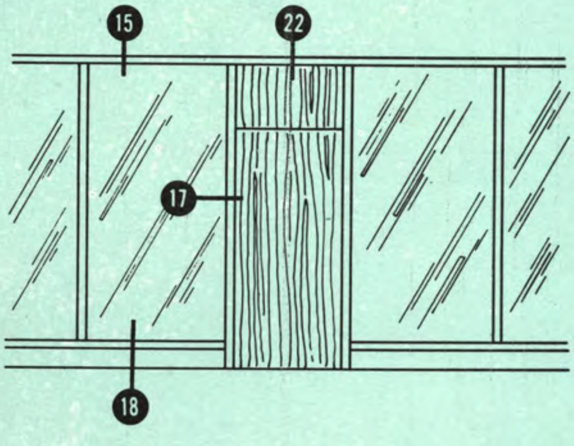
MOVABLE GYPSUM DRYWALL PARTITIONS

ELEVATIONS Scale: 3/16"=1'—0"
SECTIONS Scale: 3"=1'—0"

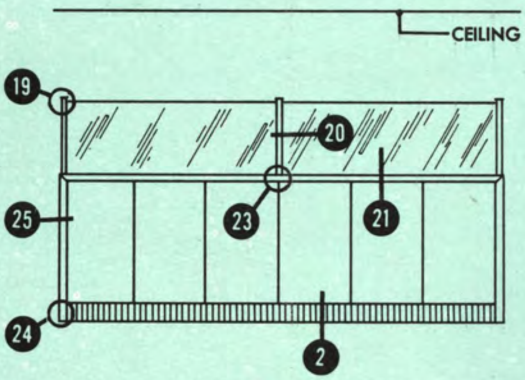
GLAZED CEILING HEIGHT



GLAZED CEILING HEIGHT



GLAZED RAILING HEIGHT



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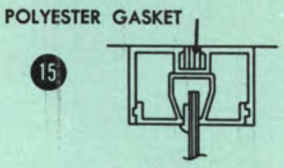

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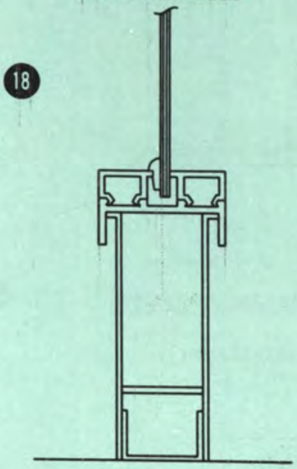

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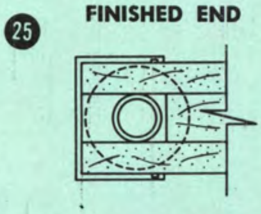
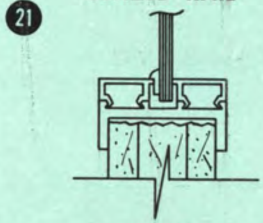


GLAZED RAIL



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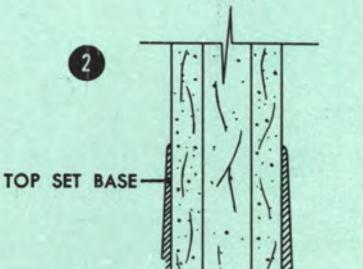
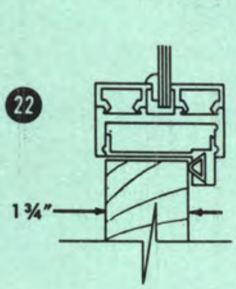
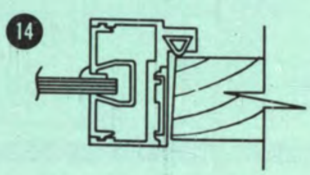


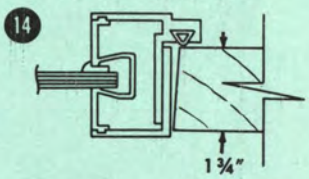
DOOR HEAD



DOOR JAMB



DOOR JAMB ALT.



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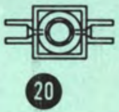
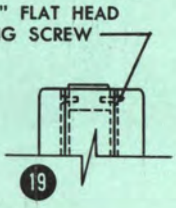
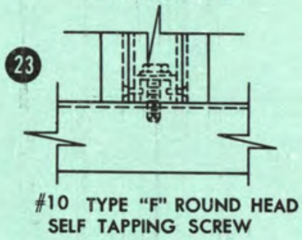


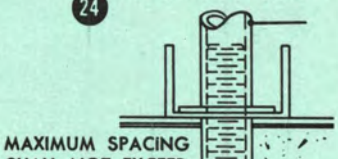
POST CAP



POST-RAIL ATTACHMENT



FLOOR ANCHOR

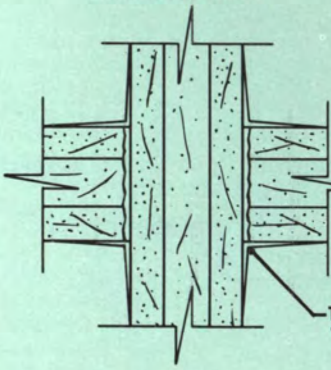

24
MAXIMUM SPACING SHALL NOT EXCEED 10'–0" C to C
PHILLIPS RED HEAD #S-34 ANCHOR

*T.M. Reg. U.S. Pat. Off

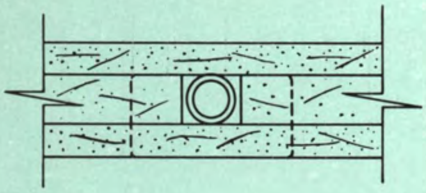
DETAILS—Scale: 3"=1'—0"

TYPICAL STANDARD DETAILS

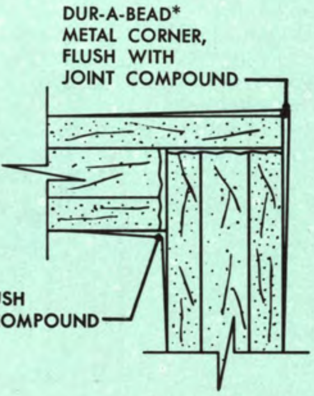
INTERSECTION



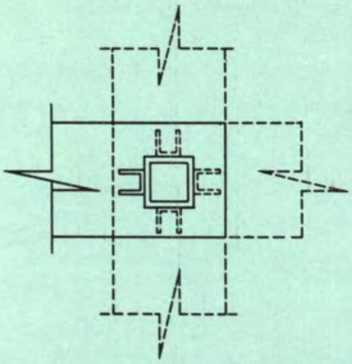
ELECTRICAL PANEL



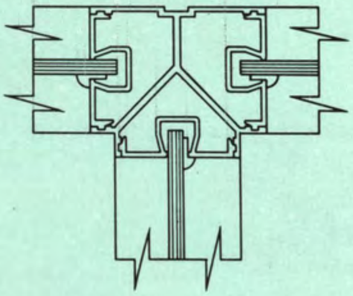
CORNER



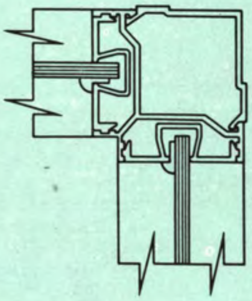
GLAZED 1, 2, 3, & 4 WAY



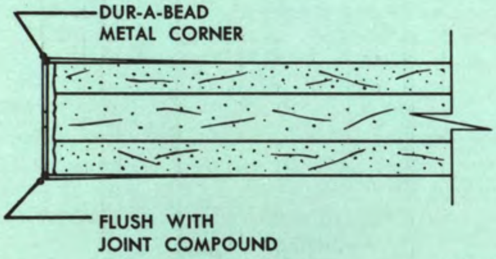
GLAZED INTERSECTION



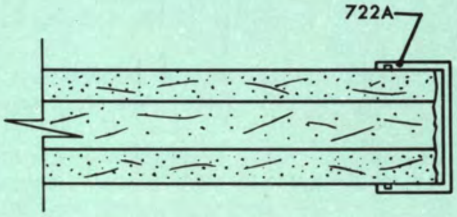
GLAZED CORNER



TERMINAL

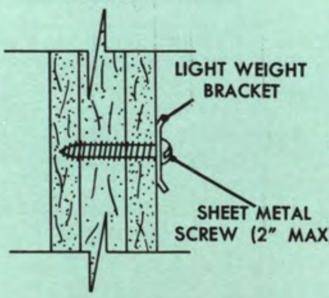


FINISHED END

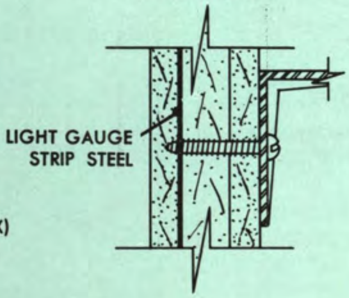


FIXTURE ATTACHMENTS

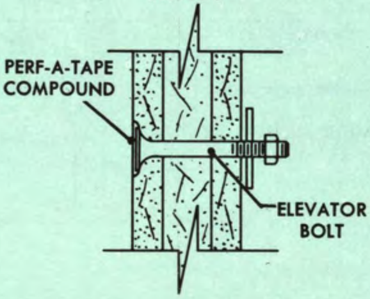
LIGHT



MODERATE



HEAVY



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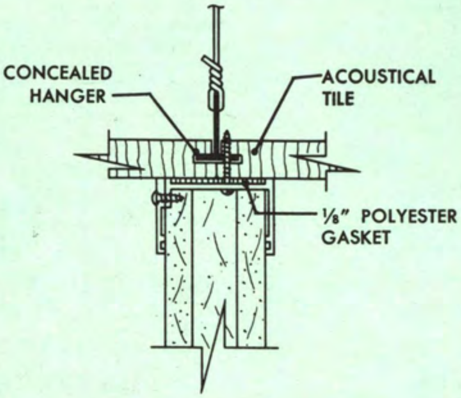
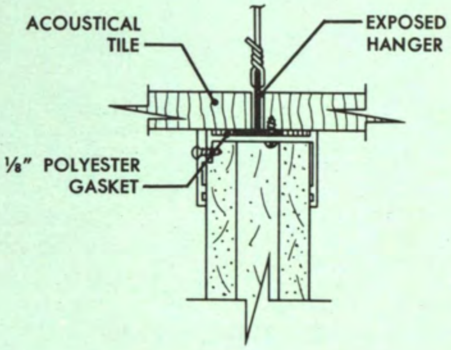
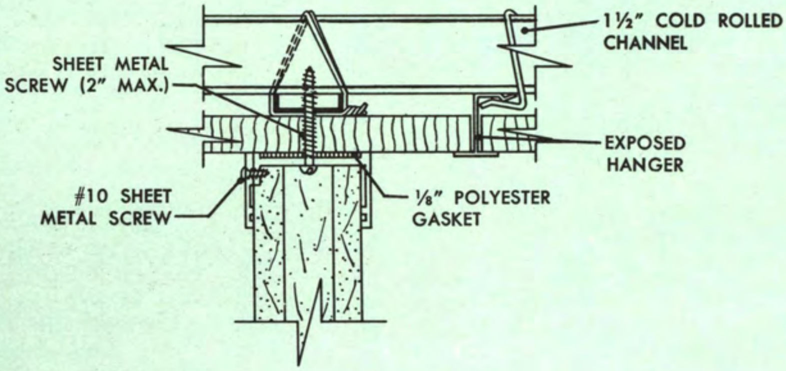
VAUGHAN WALLS
MOVABLE GYPSUM DRYWALL PARTITIONS

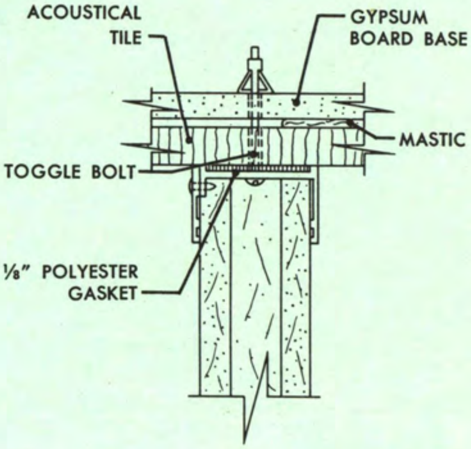
DETAILS—Scale: 3″=1′—0″

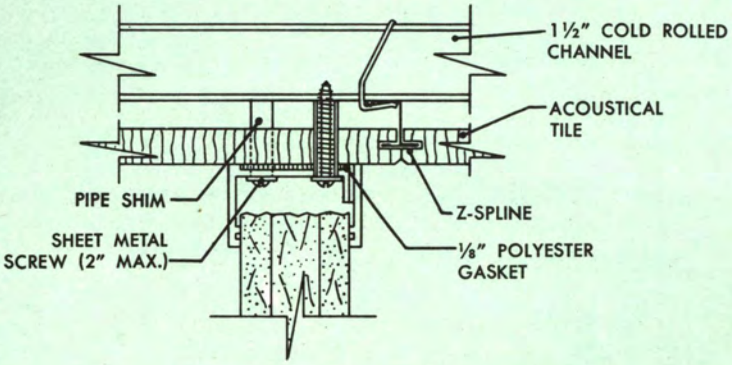
TYPICAL ACOUSTICAL TILE CEILING ATTACHMENTS

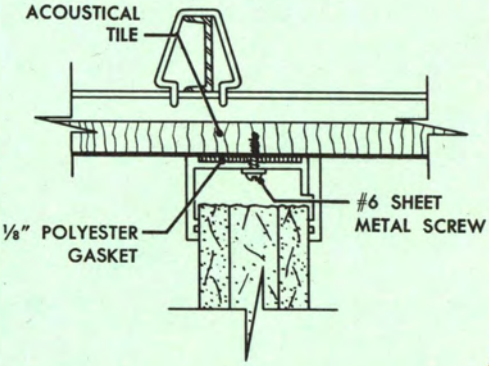












*T.M. Reg. U.S. Pat. Off

SPECIFICATIONS

NOTE TO ARCHITECTS. *At your option, the furnishing and installations of base trim, doors, door-mutes, hardware, glass, glazing or decoration pertinent to the movable partition may be made a part of this specification. If you exercise this option, such work should be specified according to its requirements in the partition section.*

I GENERAL

All Movable VAUGHAN WALLS shall be installed by an Authorized Erector. Temperatures within the building shall be above a constant minimum of 40 degrees Fahrenheit during lamination and erection of partition panels. When required, heat shall be furnished by . . . Erection of partition panels shall not begin until erection of exterior walls and glazing or temporary covering of exterior openings provides complete protection from outside weather. Coreboard and face panels shall not be stored where they will be subjected to continuous or extreme exposure to excess moisture or temperature extremes.

II WORKMANSHIP

VAUGHAN WALLS shall be installed by skilled craftsmen under the supervision of an individual who has had on-the-job training satisfactory to VAUGHAN INTERIOR WALLS, INC. Complete partitions shall be fully movable, plumb, clean, free from defects and ready for decoration.

III SCOPE

The Authorized Erector shall furnish all labor, materials and equipment necessary to install Movable VAUGHAN WALLS in accordance with the plans and as specified herein.

IV MATERIALS

Partition panels shall be jig-laminated to form 24" wide panels (nominal); they shall consist of VAUGHAN WALLS parts including 1" Gypsum Coreboard faced both sides with ⅝" FIRECODE* Gypsum Face Panels as manufactured specifically for this purpose by UNITED STATES GYPSUM. Panel thickness shall be 2¼".

Metal Components shall be furnished by the Authorized Erector and shall comply with standards approved by VAUGHAN INTERIOR WALLS, INC.

a. Steel

(1) Floor runners shall be roll formed from paint lock type steel of not less than 18 gauge.

(2) Door frames shall be two piece hollow metal construction, fabricated of steel of not less than the following gauges:

Frames	16 gauge
Closures	14 gauge
Hinge Reinforcement	9 gauge
Strike Reinforcement	12 gauge

All door frames shall receive a factory prime coat of paint.

b. Aluminum shall be extruded from 6063-T5 alloy, anodized satin finish. Commercial tolerances shall apply. Minimum thickness shall be .125", except (a) glazing stops which are .031" and (b) ceiling runners and closure plates which are a combination of .094" and .125". Fasteners shall be aluminum, or cadmium plated, when exposed. Adhesive shall be VAUGHAN WALLS Brand Cement. FINISHING ACCESSORIES (reinforcing tape, joint finishing compound, filling compound and metal corner beads) shall be as manufactured by UNITED STATES GYPSUM Company, or equal.

V INSTALLATION

The PARTITIONS shall be accurately laid out and the floor and ceiling runners securely anchored. Such attachment shall assure complete security of the partition and future removal and relocation without excessive damage to the floor or ceiling construction.

GASKETS (foam type polyethylene or similar) shall be installed between all ceiling runners and ceiling surfaces and elsewhere as required by job conditions. Such gaskets shall be 1¼" wide and with minimum thickness of ⅛" for steel installations and 3/16" for aluminum installations.

FILLER BLOCKS shall be of ⅝" gypsum wallboard cut to size and laid in all floor runners.

PARTITION PANELS shall be formed and laminated in special jigs to insure a constant dimension at the tongue and groove. The coreboard shall be offset from the face panels to form a groove 1½" deep. Panels shall be installed in floor and ceiling runners to form tight joints with true vertical and horizontal alignment.

DOOR AND WINDOW FRAMES shall be assembled level and plumb at locations indicated on the plans.

CLOSURE PLATES shall be screwed securely to short legs of floor and ceiling runners. Full length closure plates shall be used where practical. Cut ends shall be square and clean, fitting neatly to adjacent plates, trim, door frames, etc.

JOINT COMPOUND shall be applied to beveled joints of panels, to insure proper bridging of paint. Excess cement shall be wiped from the joint, leaving the true "V" bevel.

METAL CORNER BEAD shall be securely installed at all external corners. Not less than two coats of joint compound shall be applied over beads and each coat feathered out onto panel faces.

REINFORCING TAPE AND JOINT COMPOUND shall be applied as recommended by UNITED STATES GYPSUM to all internal corners and intersections where flush finishing is desired or metal trim is not specified.

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*T.M. Reg. U.S. Pat. Off.

VAUGHAN WALLS

MOVABLE GYPSUM DRYWALL PARTITIONS

Petroleum Building—Architect: J. Richard Shelley
Offices of Collier Carbon & Chemical
Los Angeles, California

Selected by these architects and many others

ARCHITECT	JOB	CITY
Allison & Rible	Cal. Int. Telephone Co.	Bishop, Cal.
Allison & Rible	Rand Corporation	Santa Monica, Cal.
Allison & Rible	U. C. Administration Bldg.	Riverside, Cal.
Anderson, Beckwith & Haible	Travelers Insurance Bldg.	Boston, Mass.
Claude Beelman	Continental Co. Bldg.	Los Angeles, Cal.
Welton Becket & Assoc.	Texas Co. Bldg.	Los Angeles, Cal.
Bennett & Bennett	1st Western Bank & Trust	Garden Grove, Cal.
Candreva & Jarrett	Rancho San Vicente Bldg.	W. Los Angeles, Cal.
Chatelain, Gauger & Nolan	IBM Building	Bethesda, Md.
L. W. Davidson	Turco Products, Inc.	Los Angeles, Cal.
A. Epstein & Sons	Square D	Chicago, Ill.
Furniture Mart	Furniture Mart	Chicago, Ill.
Hugh Gibbs	Vandenberg Air Force Base	Lompoc, Cal.
H. L. Gogerty	Palmdale High School	Palmdale, Cal.
Edwin B. Goodell, Jr.	Rockland Atlas National Bank of Boston	Boston, Mass.
Edwin B. Goodell, Jr.	Keystone Custodian Funds	Boston, Mass.
Eggers & Higgins, Edwin Keeble	VA Regional Offices	Nashville, Tenn.
Granberry, Jackson, Jr.	Southern Bell Headquarters Bldg.	Nashville, Tenn.
Holmes & Narver Env.	Stimulation Bldg. (Navy)	Point Muga, Cal.
Hovind Hawthorne & Smith	Bothell Elementary School	Bothell, Wash.
Kistner Wright & Wright	Remington Rand	Los Angeles, Cal.
Ernest Lee	Ft. Huachuca	Tucson, Arizona
Chas. Luckman & Assoc.	IBM Bldg.	Los Angeles, Cal.
Pereira & Luckman	CBS Building	Los Angeles, Cal.
Luckman & Assoc.	Luckman & Assoc. Office	Los Angeles, Cal.
A. C. Martin	Ramo Wooldridge Corp. (6 Bldgs.)	Hawthorne, Cal.
A. C. Martin	Thompson Ramo Wooldridge (4 Bldgs.)	Canoga Park, Cal.
A. C. Martin	Barker Brothers	Los Angeles, Cal.
A. C. Martin	A. C. Martin	San Diego, Cal.
Lindsay & Maples	H. W. Brown Properties	Knoxville, Tenn.
Leonard Mosias	Stewart Hotel Offices & Shops	San Francisco, Cal.
John L. Moore Co.	Daystrom Systems	La Jolla, Cal.
Perkins & Will	U. S. Gypsum	Chicago, Ill.
Mark Pfaller & Associates	Curative Work Shop	Milwaukee, Wisc.
Chas. Polacek	Central Plaza Bldg.	Phoenix, Arizona
Richard Shelley	Collier Carbon & Chemical	Los Angeles, Cal.
Rasche, Schroeder & Spransy	American Automobile Assn.	Milwaukee, Wisc.
Smith, Powell & Morgridge	Smith , Powell & Morgridge	Los Angeles, Cal.
Harwook K. Smith	Davis Building Co.	Dallas, Texas
Douglas Stone	First Western Bldg.	San Francisco, Cal.
Douglas Stone	Peninsula Hospital	Burlingame, Cal.
Henry Sylvestri	Orbach Bldg.	Los Angeles, Cal.
Thormin Haynes & Assoc.	Huntington Memorial Hospital	Pasadena, Cal.
Thorman & Baynes	Young Electric Bldg.	Los Angeles, Cal.
Scott & Beecher	Empire Bldg.	Salt Lake, Utah
Slack W. Winburn	Surety Life Insurance Co.	Salt Lake City, Utah

"USG", "PERF-A-TAPE", "DUR-A-BEAD", "FIRECODE", are trademarks registered by United States Gypsum. "USG", and "FIRECODE" identify the particular gypsum wallboards, "PERF-A-TAPE" identifies the particular joint sealing tape, "DUR-A-BEAD" identifies the particular corner bead; manufactured only by United States Gypsum.

UNITED STATES GYPSUM—The Greatest Name in Building

GENERAL OFFICES • 300 WEST ADAMS STREET • CHICAGO 6, ILLINOIS

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(WALTHAM)
CHARLOTTE, N.C.
CHICAGO, ILL.
CINCINNATI, OHIO
CLEVELAND, OHIO
(CLEVELAND HEIGHTS)
DALLAS, TEXAS
DENVER, COLO.
DETROIT, MICH.
(SOUTHFIELD)
GRAND RAPIDS, MICH.
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MIAMI, FLORIDA
MILWAUKEE, WISC.
MINNEAPOLIS, MINN.
NEWARK, N.J.
(CLIFTON)
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(HAMDEN)
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NEW YORK, N.Y.
(NEW YORK CITY)
(SCARSDALE)
OKLAHOMA CITY, OKLA.
OMAHA, NEBR.
PEORIA, ILL.
PHILADELPHIA, PA.
(BRYN MAWR)
PHOENIX, ARIZ.
PITTSBURGH, PA.
PORTLAND, ORE.
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(WARWICK)
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STOCKS AVAILABLE
FROM WAREHOUSES
IN PRINCIPAL CITIES

A.I.A. File 19-D-3

TECHNICAL INFORMATION

USG® SHEATHING

USG® FIREPROOF GYPSUM SHEATHING
USG® FIREPROOF GYPSUM SHEATHING
GYPSUM SHEATHING
GYPSUM SHEATHING

UNITED STATES GYPSUM
The Greatest Name in Building
General Offices: 300 West Adams St., Chicago 6, Ill.

1961

A.I.A. File 19-D-3

USG* SHEATHING

DESCRIPTION

USG Sheathing is a fireproof gypsum sheathing material. It is made in large unit sheets ½″x2′x8′ and ½″x4′x8′, 9′ with a water-resistant gypsum core containing an emulsified asphalt and enclosed in a specially treated, water-repellent, heavy black paper. The long edges are V-tongued and grooved on 2′x8′ and square on 4′x8′, 9′.

FUNCTION AND UTILITY

Fireproof—The gypsum core is incombustible and will not transmit high temperatures until completely calcined—a slow process.

Resistance to Weather and Moisture—The gypsum in the core is thoroughly inter-mixed with asphalt type emulsion and the tough paper covering is given a special water-repellent treatment. This combination provides an amazing resistance to weather and makes possible open storage on the job, and exposure on the framing during construction without appreciable loss of structural value. No harmful warping or buckling.

USG Sheathing is designed to permit escape of water vapor that may penetrate the stud space. (See technical data for vapor permeability.)

Adds Structural Strength—Wet or dry, USG Sheathing provides unusual lateral bracing to the frame. (See technical data.)

Wind-Tight Joints—The precision formed, interlocking V-tongue and groove edges snugly fitted, minimize wind infiltration. With 4′x8′ vertically applied, edge joints abut on centers of supports.

Economical

a. Low material cost.
b. Full dimension—no face loss.
c. Minimum of waste.
d. Fast application—up to 1000 sq. ft. can be applied in eight hours.
e. Eliminates building paper except where required by local building regulations.

Compliance—USG Sheathing complies with the following standard specifications for gypsum sheathing board:

Federal Specification SS-S-276.

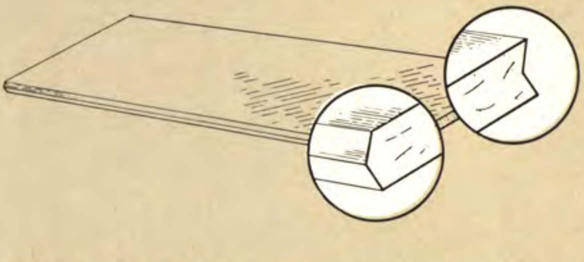
American Society for Testing Materials Standard Specification for Gypsum Sheathing Board, A.S.T.M. Designation—C79.

USG Sheathing 4′x8′, 9′ is designed to meet FHA Circular 12 requirements for use without corner bracing.

LIMITATIONS OF USE

1. USG Sheathing is not to be considered as a vapor barrier.
2. **Maximum Stud Spacing**—USG Sheathing 2′x8′ is designed for use on stud spacing up to and including 24″ o.c.; 4′x8′, 9′, up to 16″ o.c.
3. **Attachment of Exterior Finishes**—Wood siding, wood furring strips, stucco mesh, wall ties, etc., shall be secured to the framing members by nailing through the USG Sheathing.
4. USG Sheathing is not recommended as a base for adhesive application of acoustical tile; use ½″ T&G BAXBORD Backing Board. Where a one hour fire-rated acoustical tile base is required, use ⅝″ BAXBORD FIRECODE Gypsum Backing Board, on open web steel joist—concrete floor construction. Refer to SHEETROCK* Wallboard AIA File Number 23-L, BAXBORD Backing Board section.

Tongue and Groove Edges (2′ x 8′)



USG Sheathing 2′x8′ being applied to wood frame house

USG 4′ x 8′ Sheathing (Sq. Edge)

*Trademark Reg. U. S. Pat. Off.

"USG" "SHADOW-LOCK" "SHEETROCK" "FIRECODE" and "BAXBORD" are registered trademarks owned by United States Gypsum and used by it to distinguish its products. "USG" identifies the particular gypsum board sheathing, "SHADOW-LOCK" identifies the particular attachment system for asbestos shingles, "SHEETROCK", "BAXBORD" and "FIRECODE" identify the par lar gypsum board manufactured only by United States Gypsum.

USG
SHEATHING

APPLICATIONS

General—USG Sheathing is an excellent base for wood siding . . . brick veneer . . . stucco . . . wood or asbestos siding shingles. Besides being the finest sheathing for housing, it can be used, exposed to the weather, as an economical siding for farm buildings . . . tobacco barns . . . and other buildings, where a decorative exterior finish is not required. USG Sheathing may be painted after six months exposure to the weather.

32″-48″ Asbestos Cement Siding Shingles. 32″ and 48″ Asbestos siding shingles may be applied directly over USG Sheathing by nailing asbestos through sheathing into framing members.

Panel type Wood Shake Siding. Panel type wood shake sidings, such as Shakertown, GLUMAC, mfrd. by Perma Products Co., Cleveland, Ohio, and SHAKE-A-PLY, mfrd. by the SHAKE-A-PLY Co., N. Portland, Ore., may be applied over USG Sheathing in accordance with the recommendations of the siding manufacturer.

SHADOW-LOCK* ATTACHMENT SYSTEM

Description—USG SHADOW-LOCK Attachment System is a means of attaching standard size asbestos cement siding directly over USG Sheathing with precision-made aluminum channels and corner pieces. This method of attachment creates a striking deep shadow line not obtainable with regular nail on attachment, minimizes shingle breakage because nails do not penetrate the siding, and is economical because it is self-aligning and uses 5% less siding.

TECHNICAL DATA

1. Strength to Resist Lateral Distortion—Comparative tests were conducted in USG Research Laboratories and attested by Phil C. Huntly, Consulting Engineer. Tested dry, USG Sheathing applied to an 8′x8′ panel of 2″x4″ framing on 16″ centers had a lateral distortion of .498″ under a racking load of 1850 lbs.

A similar panel was subjected to the equivalent of 5½ years of average United States rainfall in a giant "weatherometer" and with the same load of 1850 lbs. the distortion was only 1.125 inches.

Under this same load a similar frame sheathed with 1″x8″ dry wood sheathing resulted in a distortion of 10.312 inches.

2. Insulation—For ½″ USG Sheathing the thermal conductance is 2.86 and thermal resistance is 0.35.

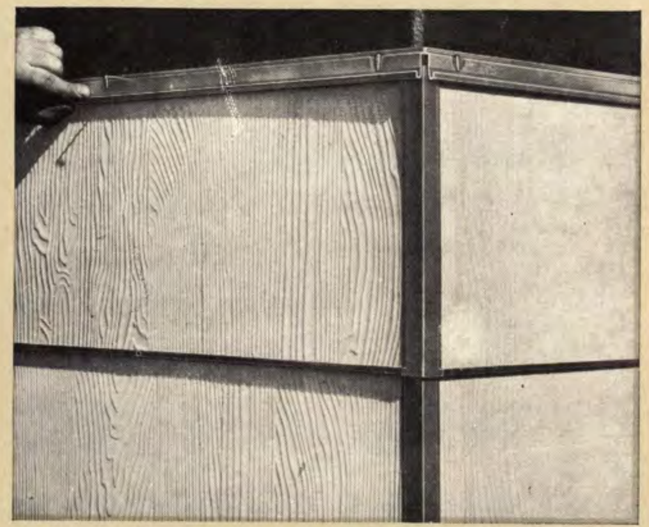
3. Vapor Permeability—USG Sheathing has an average permeability of 27.3 perms. (One perm equals 1 grain per sq. ft. per hour per inch of mercury vapor pressure difference.)

Gypsum Sheathed Panels Without Corner Bracing

(1) Results of Racking Study of ½ in. Thick 4′x 8′ USG sheathing

Condition	At 1200 lb. Load		At 2400 lb. Load		Maximum Load lb.
	Deflection In.	Set In.	Deflection In.	Set In.	
DRY	.089	.016	.230	.107	6000
WET	.093	.032	.278	.130	4530

(1) Based on averages of three panels tested at a nationally recognized testing laboratory.



Application of USG SHADOW-LOCK Attachment System

A Finished Home on which USG SHADOW-LOCK System was used

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*T. M. Reg. U. S. Pat. Off.

USG SHEATHING

SPECIFICATIONS FOR USG SHEATHING

NOTE TO ARCHITECT

1. Federal and A.S.T.M. Specifications—USG Sheathing complies with Federal Specifications for Gypsum Sheathing Board. SS-S-276 and American Society for Testing Materials Standard Specification for Gypsum Sheathing Board, A.S.T.M. Designation—C79.

SCOPE

Unless otherwise shown on plans, all exterior walls shall be sheathed in accordance with these specifications.

MATERIALS

Sheathing shall be USG Sheathing as manufactured by the United States Gypsum Company, ½"x24"x8'0" or ½"x48"x8'0", 9'0".

Nails shall be 11-gauge galvanized, 7/16" head diameter, 1½", or 1¾" long roofing nails.

Staples shall be 16 gauge galvanized divergent point, nominally ½" wide, 1½" long.

APPLICATION

Apply USG Sheathing 2'x8' with the long dimension across the supports and with the groove edge down interlocking the tongue and groove edges. Ends of sheets shall abut over centers of supports, and all end joints shall be staggered. Fit snugly around all window and door openings.

Apply USG Sheathing 4'x8' or 9' with the long dimension parallel to the supports. Edges of the sheets shall abut over centers of supports. Fit snugly around all window and door openings.

ATTACHMENT

Nail USG Sheathing 2'x8' shall be nailed 8" o.c. to studs (4 nails per 2' width per stud) when either the application of the exterior finish following sheathing application provides supplemental nailing through the sheathing into the studs or diagonal bracing is installed. Otherwise, gypsum sheathing shall be nailed 4" o.c. to studs (7 nails per 2' width per stud).

USG Sheathing 4'x8' or 9' shall be nailed 4" o.c. around the entire perimeter of the board and 8" o.c. on intermediate framing members.

Staple USG Sheathing 2'x8' shall be stapled 8" o.c. to studs (4 staples per 2' width per stud) when either the application of the exterior finish following sheathing application provides supplemental nailing through the sheathing into the studs or diagonal bracing is installed. Otherwise, gypsum sheathing shall be stapled 4" o.c. to studs (7 staples per 2' width per stud). Staples shall be driven parallel to the long dimension of the framing members. Staple head shall be driven flush to the sheathing surface and shall not break through sheathing paper.

OPTIONAL INCLUSIONS

1. Wood Siding Over USG Sheathing

Apply siding directly over USG Sheathing, securing it with nails driven through sheathing and into studs. Nails shall have a minimum penetration of 1¼" into the studs. End joints of siding shall be over center of studs.

2. Masonry Veneer Over USG Sheathing

Masonry ties shall be attached with nails driven through the sheathing and into the studs, using nails of sufficient length to penetrate 1¼" into the studs. (At least 6d common nails.) Ties shall be spaced vertically to conform with coursing of masonry veneer.

3. Stucco Over USG Sheathing

Stucco may be applied over USG Sheathing by the use of USG Stuccomesh applied with stucco furring nails providing at least 1⅛" penetration into studs. See Sweet's catalog or AIA file 20-B.

SPECIFICATIONS FOR USG SHADOW-LOCK ATTACHMENT SYSTEM (Short Form)

SCOPE

Unless otherwise shown on plans standard size straight edge asbestos cement siding shingles shall be applied to all exterior walls over gypsum sheathing and held in place by means of the USG SHADOW LOCK Attachment System.

MATERIALS

Channels shall be USG SHADOW-LOCK Channels as manufactured by the United States Gypsum Company.

Corners shall be USG SHADOW-LOCK Corners 11½" long as manufactured by the United States Gypsum Company.

Nails shall be USG SHADOW-LOCK Nails 12 gauge galvanized 1¾" long with a diamond point and ⅝" hook head.

APPLICATION

The channels, corners and straight edge asbestos shingles shall be applied and secured in strict accordance with the recommendations of the manufacturer of the attachment system.

UNITED STATES GYPSUM
The Greatest Name in Building
GENERAL OFFICES—300 WEST ADAMS STREET, CHICAGO 6, ILLINOIS

A.I.A. File 37-B
37-C

TECHNICAL INFORMATION

USG* MINERAL FIBER INSULATION PRODUCTS

UNITED STATES GYPSUM

1962

*T.M. Reg. U.S. Pat. Off.

A.I.A. File 37-B
37-C

THERMAFIBER*
INSULATING WOOL

DESCRIPTION

THERMAFIBER Insulating Wool consists of spun mineral fibers mechanically formed either into a uniform mat of definite dimensions and controlled density or into a uniform pellet form suitable for pouring or blowing into framing spaces.

THERMAFIBER Regular Insulating Wool Blankets—Are enclosed, except for mill cut ends. One side of the mat is enclosed in strong asphalted paper, an effective vapor barrier, extending well beyond the edges of the wool to form strong flanges for easy and secure attachment. The breather side is completely enclosed in a durable, fire-resistant, porous kraft paper. See table below for sizes.

THERMAFIBER Open Face Insulating Wool Blankets—Open face blankets have the same general characteristics as regular blankets except that the paper on the breather side is omitted. See table below for sizes.

THERMAFIBER Reflective Insulating Wool Blankets—Foil Both Sides—Both the vapor barrier and breather sides are covered with genuine aluminum foil. The vapor barrier side is a solid surface of aluminum foil giving one of the most effective known vapor-barrier surfaces. The foil on the breather side is perforated to allow the breathing of the mineral wool fibers and minimize vapor traps in walls and ceilings. The reflective surfaces provide the added factor of reflecting up to 95% of radiant heat. The reflective surface must always be exposed to an air space of no less than ¾″ to achieve maximum insulation value. We do not recommend 3″ thick blankets reflective on two sides for the sidewalls, since the normal stud space would not allow a ¾″ air space parallel to *each* reflective side. See table below for sizes.

THERMAFIBER Reflective Insulating Wool Blankets—Foil One Side Only—Are enclosed blankets with genuine aluminum foil on one side (one reflective surface). Blankets are available with either foil vapor barrier and regular breather paper or regular vapor barrier and perforated foil breather paper. See table below for sizes.

THERMAFIBER Reverse Flange Insulating Wool Blankets—Are a specialized product for application from the exterior side of the framing members. It has the same characteristics as Regular Blankets except that the stapling flanges extend from the breather side to permit proper installation of the vapor barrier toward the warm side of the room.

THERMAFIBER Blowing Wool—Consists of mineral wool fibers formed into pellets for installation by pneumatic machine.

THERMAFIBER Pouring Wool—Consists of mineral fibers formed into pellets for pouring and spreading by hand. Wool is packaged in lightweight bag for easy handling.

FUNCTION AND UTILITY

High Thermal Resistance—Conductance "k" Factor is 0.27 per inch thickness and Resistance 3.70 per inch thickness. See Product Data for Resistance for given thicknesses.

Noncombustible—The mineral fibers will not burn or support combustion.

Resistance to Vapor Transmission—The aluminum foil surface of the asphalted paper resists the passage of water vapor and protects against condensation. Aluminum foil has a vapor permeability factor of 0.30 perm and asphalted paper has a vapor permeability factor of less than 1.00 perm. Both are within the limits of permeability recommended by many recognized authorities for normal building occupancy.

Uniform Effectiveness—Manufactured to closely controlled tolerance for density and dimension, for uniform insulation.

Stability—Highly resilient, resists settling. The mineral fibers are resistant to decay, corrosion, moisture and all other forms of deterioration.

PRODUCT DATA

DESCRIPTION	Type	Meets Federal Spec's.	Approx. Wt. lbs./sq. ft.	Approx. Thickness	Conductance		Resistance		Framing Spacing	Length
					k	C	1/k	1/C		
Perimeter Insulation	Semi-rigid (Mineral Wool)	HH-I-562 Type 1 Class 2 (Amended)	0.50 0.67 1.01 1.33	¾″ 1″ 1½″ 2″	0.24	0.32 0.24 0.16 0.12	4.17	3.13 4.17 6.25 8.33	(Widths) 12″, 18″ or 24″	48″ or 60″ (5)
	Asphalted Vapor Barrier Paper Enclosed Blanket (1)	HH-I-521 C Type 1 Class C	0.30 0.33 0.47	1½″ 2″ 3″	0.27	0.180 0.135 0.090	3.70	5.55 7.40 11.10	16″, 20″ or 24″	96″ (1½″) 24″, 48″, 96″
	Open Face Blanket	HH-I-521 C Type 1 Class B	0.59 0.80 0.90	3⅝″ 5″ 6″		0.074 0.054 0.045		13.41 18.50 22.20	o.c. 16″ or 24″ o.c.	24″, 48″, 96″ 48″, 96″
	Pouring, or blowing	HH-I-521 C Type 3	0.33 0.67 0.99	2″ 4″ 6″	0.30	0.150 0.075 0.050	3.33	6.66 13.32 19.98	Hand poured or pneumatically applied	
THERMAFIBER Insulating Wool (Mineral Wool)					RESISTANCE VALUES					
					Ref. Sur.	Heat Flow	R(4)	1/R(U)		
	Blanket Insulation Faced with Aluminum Foil	HH-I-521 C Type 1 Class C	3″—0.47 2″—0.33	Horiz. 3″ (2) Horiz. 3″ (2) Horiz. 2″ (2) Horiz. 2″ (2)	2 2 2 2	down up down up	20.1 14.8 16.4 11.1	.050 .068 .061 .090	16″ or 24″ o.c.	48″, 96″
				Horiz. 3″ (3) Horiz. 3″ (3) Horiz. 2″ (3) Horiz. 2″ (3)	1 1 1 1	down up down up	16.6 13.3 12.9 9.6	.060 .075 .078 .104		
				Vert. 2″ Vert. 2″	2 1		14.4 11.8	.069 .085		

(1) Available in Reverse Flange 15″ x 96″, also Regular Long Length Blankets 15″ x 24-ft.

(2) ¾″ minimum air space facing each reflective surface.

(3) Reflective surface on permeable side (exposed to attic).

(4) Sum of insulation, air space and surface resistance.

(5) Check with USG Representative for shipping area.

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*T.M. Reg. U.S. Pat. Off.

"THERMAFIBER," "PYROFILL," "SHEETROCK," "ROCKLATH," "DUPLEX", "USG," are trademarks registered by United States Gypsum and are used by it to distinguish products of its manufacture. "THERMAFIBER" identifies the particular mineral fiber wool; "PYROFILL," identifies the particular gypsum concrete; "SHEETROCK" identifies the particular wallboard or roof deck formboard; "ROCKLATH" identifies the particular gypsum lath or plaster base, "DUPLEX" identifies the particular insulation board, "USG" identifies the various products, all of which are manufactured only by United States Gypsum Company.

Resistant to Vermin—The mineral fibers offer no sustenance to vermin or rodent life.

Light Weight—see Product Data table.

Resilient—Spun mineral fibers are strong and resilient. Blankets spring back to full thickness when removed from package.

Moisture Resistant—Mineral wool fibers do not absorb moisture. If the insulation becomes wet, it will dry quickly as soon as the source of moisture is removed. Wool's original insulating efficiency will be restored when fibers are dry.

FEDERAL SPECIFICATIONS

THERMAFIBER* Insulating Wool complies with Federal Specification HH-I-521C.

VENTILATION

Pitched Roofs—Ventilation is extremely important, and should be provided by installing louvers or ventilators above the insulation, at each end of the attic, to relieve high summer temperatures and to improve moisture control.

Flat Roof—Methods of ventilating flat roofs vary because of different types of construction. Ventilation may be provided by louvers located in opposite sidewalls, or by galvanized metal ventilators extending down underneath the cant strips, or through a screened opening running the entire length of the overhang.

Vapor Barriers and Humidity Control—To control condensation efficiently a vapor barrier must be installed on the warm, or interior, side of a wall. The vapor barrier built into THERMAFIBER Insulating Wool Blankets is highly resistant to the passage of moisture, and automatically provides good condensation control when batts are properly installed. Although vapor barriers offer protection against the formation of condensation, and reduce the danger of damage casued by condensation, over-humidification should be guarded against. If the relative humidity in the building is excessive, steps must be taken to reduce the sources of moisture.

LIMITATIONS OF USE

1. Masonry Walls—It is strongly recommended that at least a 1″ air space be provided between insulation and exterior masonry. Suitable weep holes are recommended. If THERMAFIBER Wool is placed in direct contact with exterior masonry walls, the masonry must be watertight to prevent the insulation from becoming wet. The insulation is less effective and may transmit moisture to interior finishes if it becomes wet by direct contact with leaking exterior masonry.

2. Suspended Ceilings and Floors Over Unexcavated Areas—Suspended ceiling may be insulated by blankets installed with the vapor barrier down. Regular blankets installed in floors over unexcavated areas should be provided with additional effective installation. (Additional supports are generally not required for Reverse Flange Insulating Batts.) If preferred, Blowing Wool may be used for suspended ceilings and installed pneumatically.

SPECIFICATIONS

SCOPE

Unless otherwise shown on plans, all insulation shall be furnished and installed according to these specifications.

MATERIAL

Insulation shall be (designate product) installed in accordance with the Manufacturer's recommendations.

6″, 5″ and 3⅝″—THERMAFIBER Insulating Wool Blankets —Open Face

3″, 2″ and 1½″—THERMAFIBER Regular Insulating Wool Blankets

3″ and 2″—THERMAFIBER Reflective Insulating Wool Blankets—Foil Two Sides

3″ and 2″—THERMAFIBER Reflective Insulating Wool Blankets—Foil vapor barrier or foil breather

3″, 2″ and 1½″—THERMAFIBER Reverse Flange Insulating Wool Blankets

THERMAFIBER Pouring Wool

THERMAFIBER Blowing Wool

All to be as manufactured by the United States Gypsum Company.

APPLICATION

Insulating Wool Blankets shall be installed within the stud spaces of all exterior walls and between the framing members of the top floor ceiling or roof by (1) attaching the flanges of the wool blanket to the face of the framing members†, (2) recess the blanket and tack the flanges to the sides of studs or joists. (1) The asphalted vapor barrier shall face the inside of the building and the nailing flanges shall be tacked or stapled securely. Sufficient tacks or staples shall be used to avoid gaps or bulges in the vapor barrier paper. In no case, shall they exceed a spacing of 6″ on centers. Apply Insulation in all framing spaces as specified and, where necessary, the insulation and vapor barrier shall be cut to fit in a neat and workmanlike manner.

†*Not applicable to USG Reverse Flange Insulating Wool Blankets.*

(1) *Mandatory where foil products are used.*

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*T. M. Reg. U. S. Pat. Off.

INSTALLED RESISTANCE

The new measure of Insulation Value.

THERMAFIBER* Insulation products now offer more advantages than ever before with the advent of the "Installed Resistance" program.

In the past, thickness of insulation was the standard measure of insulation performance despite the fact that different densities, conductance ("k" Factors) greatly influenced performance.

However, rather than thickness alone, the fundamental purpose of insulation is to provide resistance to the passage of heat escaping from a house in winter or heat entering in the summer. The Installed Resistance "R" of any given product takes into account all of the influencing factors, thickness, density and conductivity. Furthermore, it is possible to specify the performance value of the mass insulation and the value of adjacent air spaces and the direction of heat flow, as well, and still use a single "R" or Resistance.

THERMAFIBER Blanket bags are marked as follows:

Thermafiber Product	Installed Resistance "R" Factor
6" thick batts	R-24 Installed in ceilings
5" thick batts	R-19 Installed in ceilings
3⅝" thick batts	R-13.4 Installed in walls
3" thick blankets	R-11 Installed in walls R-13 Installed in ceilings or floors over vented crawl spaces
2" thick blankets	R-8 Installed in walls R-9 Installed in ceilings or floors over vented crawl spaces
1½" thick blankets	R-7 Installed in walls and floors over vented crawl spaces

All Mineral Wool Insulation products (slag or glass type) marked with the same Installed Resistance Number have the same insulation value regardless of individual thickness.

A uniform, simple and accurate system of labeling insulation efficiently made it possible for the industry to adopt and recommend three new Insulation Standards to upgrade insulation sales and at the same time assure builders and home owners of maximum savings and comfort.

These new insulation standards are:

I. All-Weather Comfort Standard
This is the standard requirement for electric heat and air conditioning. This assures the builder of the lowest possible equipment costs and the home owner the lowest possible heating and cooling bills.

II. Moderate Comfort and Economy Standard
This standard defines the amount of insulation recommended in houses that are not electrically heated but where reasonable comfort and economy is desired.

III. Minimum Acceptable Comfort Standard
This standard specifies the amount of insulation necessary for minimum acceptable comfort in houses under any circumstance.

Listed below are charts illustrating the three Comfort Standards showing desired "U" factor, "R" factor and thickness of wool required to insulate properly:

Recommended values of thermal resistance of Air Spaces and Surfaces, both reflective and non-reflective, are shown as follows:

I. All-Weather Comfort Standard—Quality Home Requirements—For Electrically Heated and Air Conditioned Houses.

RECOMMENDED BY ALL-WEATHER COMFORT STANDARD

Building Section	U-Value Specified	"R" Number Needed to meet Required U	Wool Thickness	Installation Recommendations
Ceilings—Extreme Temp. areas	0.04	R-24	6"	Install with ¾" or larger air space between vapor barrier & ceiling surface
Ceilings—moderate temp. areas	0.05	R-19 R-19-2S summer air-conditioning only	5" 3" foil two sides	Install with 1" or larger air space between vapor varrier and ceiling surface
Walls	0.07	R-11 R-13.4	3" 3⅝"	May be installed with or without ⅝" air space
Floors (over unheated space)	0.07	R-13	3"	Install with 1" or larger air space between vapor barrier & floor

II. Moderate Comfort and Economy Standard

Building Section	U-Value Specified	"R" Number Needed to meet Required U	Wool Thickness	Installation Recommendations
Ceiling	0.07	R-13	3"	Install with ¾" or larger air space between vapor barrier & ceiling surface
		R-13-1S Summer air-conditioning only	2" foil vapor barrier side	Install with 1" or larger air space between vapor barrier and ceiling surface
Walls	0.09	R-8	2"	Install with one ¾" or larger air space
Floors (over unheated space)	0.09	R-9	2"	Install with 1" or larger air space between vapor barrier and floor

III. Minimum Acceptable Comfort Standard

Building Section	U-Value Specified	"R" Number Needed to meet Required U	Wool Thickness	Installation Recommendations
Ceiling	0.10	R-9	2"	Install with ¾" or larger air space between vapor barrier and ceiling surface
Walls	0.11	R-7	1½"	Install with two ¾" or larger air spaces
Floors (over unheated space)	0.11	R-7	1½"	Install with 1" or larger air space between vapor barrier and floor

THERMAFIBER Insulation packages are marked with the R (Installed Resistance) number corresponding to the material needed to meet this requirement.

CONDUCTIVITIES (k) AND CONDUCTANCES (C)
for use in calculating heat transmission coefficients

	PRODUCT	DESCRIPTION	CONDUCTIVITY or CONDUCTANCE (1)		RESISTANCE (Thickness) Per Inch	RESISTANCE (Thickness) As Listed
			k	C	$\frac{1}{k}$	$\frac{1}{C}$
USG* PRODUCTS	THERMAFIBER* Insulating Wools	Enclosed, Open-faced blanket Pouring, or blowing Wool	See data page 2.		See data page 2.	
	½" USG* Insulating Products	Tile, Plank, Building & DUPLEX* Board	0.36	0.72	2.78	1.39
	25/32" USG Insulating Products	Asphalt-Coated or Impregnated Sheathing	0.38	0.49	2.64	2.04
	USG Insulating Roof Deck	Regular 1½"		0.24		4.17
		Regular or Sealed 2"		0.19		5.55
		Regular or Sealed 3"		0.12		8.33
	USG Roof Insulation	Plain-Asphalt Coated or Asphalt Impregnated ½"		0.72		1.39
		1"		0.36		2.78
		1½"		0.24		4.17
		2"		0.19		5.26
	PYROFILL* Gypsum Roof Decks (Supporting steel not included)	2" PYROFILL & ½" SHEETROCK Formboard		0.65		1.55
		2" PYROFILL & 1" USG Insul. Formboard		0.24		4.06
		2" PYROFILL & 1" USG Acoustical Formb'd		0.26		3.81
		2¼" PYROFILL & ¼" Asbestos Board Formb'd		0.71		1.41
	USG Metal Edge Gypsum Plank	2" Thick, precast decking		0.60 (2)		1.66
	USG Steel Roof Deck	Rib type—interlock panel	4.00 +	0.90 (3)	Negl.	1.11 (3)
INTERIOR FINISHES	Gypsum Plaster, Sand	Plaster thickness—½" ½"		11.10		0.09
	Gypsum Plaster, LW-Aggregate	Plaster thickness—½"		3.12		0.32
	Gypsum Lath & Plaster, Sand	Plaster thickness—½" ⅞"		2.40		0.41
	Metal Lath & Plaster, Sand	Plaster thickness—¾" ¾"		7.69		0.13
	Wood Lath & Plaster, Sand	Plaster thickness		2.50		0.40
	Insulating Board Base—½" Thick	Plaster thickness—½"		0.66		1.67
	SHEETROCK* Gypsum Wallboard	Plain or Decorated (dry wall) ½"		2.22		0.45
	Gypsum Board	ROCKLATH* Plaster Base ⅜"		3.10		0.32
EXTERIOR FINISHES (frame walls)	Brick Veneer	4" Thick (Nominal)		2.27		0.44
	Wood Shingle Siding	7½" Exposure		1.15		0.87
	Yellow Pine Lap Siding	½" x 8"		1.18		0.85
SHEATHING	Gypsum—½"	Asphalt or Asphalt Impreg.		2.86		0.35
	Insulating Board—25/32"	Plain		0.48		2.06
	Fir & Yellow Pine (1")	Actual Thickness—25/32"		1.02		0.98
WOODS	Yellow Pine or Fir		0.80		1.25	
	Fir Sheathing—Building Paper & Yellow Pine Lap Siding			0.53		1.89
ROOFING MATERIALS	Asphalt Shingles			2.27		0.44
	Built-up Roofing	Assumed Thickness—⅜"		3.00		0.33
	Wood Shingles			1.06		0.94
MASONRY MATERIALS	Brick	Face		2.27		0.44
	Clay Tile (Hollow) 4"	1—Air Cell Direction Heat Flow		0.90		1.11
	Clay Tile (Hollow) 6"	2—Air Cell Direction Heat Flow		0.66		1.52
	Clay Tile (Hollow) 8"	2—Air Cell Direction Heat Flow		0.54		1.85
	Concrete (Poured)	Light Weight Aggregate (4)	2.50		0.40	
	Concrete (Poured)	Sand & Gravel Aggregate (5)	12.00		0.80	
	Concrete (Block) 4"	Hollow—Cinder Aggregate		0.90		1.11
	Concrete (Block) 8"	Hollow—Gravel Aggregate		0.90		1.11
	Concrete (Block) 8"	Hollow—Cinder Aggregate		0.58		1.72
	Concrete (Block) 12"	Hollow—Cinder Aggregate		0.52		1.89
SURFACES	Still Air (Horizontal-up)	Ordinary Non-Reflective Materials		1.63		0.61
	(Vertical-Horizontal)	Ordinary Non-Reflective Materials		1.46		0.68
	15 MPH Wind Velocity	Any Position, Any Direction		6.00		0.17
AIR SPACE (Vertical)	Bounded by ordinary materials	¾" to 4" Horiz.-Up (E = 0.82)		1.08		0.92
	Aluminum Foil, bright one side	¾" to 4" Horiz.-Up (E = 0.05)		0.38		2.64
AIR SPACE (Horizontal)	Bounded by Ordinary Materials	¾" to 4" Vertical-Up (E = 0.82)		1.24		0.80
	Aluminum Foil, bright one side	¾" to 4" Vertical-Up (E = 0.05)		0.54		1.84

(1) Expressed in Btu per sq. ft. per hr. per deg. F. temperature difference. Conductivities (k) are per inch thickness and conductances (C) are for thickness or construction stated, not per inch of thickness.
(2) Figure based on U.S.Gypsum Laboratory Tests.
(3) "U" Factor shown, includes "Outside Surface—15 mph wind—0-17," "Built-up Roofing—⅜"—0.33", "Inside Surface—Still air—0.61".
(4) Density 80 lbs. per cubic foot.
(5) Density 140 lbs. per cubic foot, not dried.
(6) Based on 50 degree temperature difference.

*T.M. Reg. U.S. Pat. Off.

THERMAFIBER*
INSULATING SOUND CONTROL SYSTEM

DESCRIPTION

A new low cost sound control system, consisting of THERMAFIBER Mineral Wool batts and slotted wood studs, has been developed by U.S. Gypsum for use as divider partitions. Either lath and plaster or dry wall may be used.

Studs and wall facing materials are framed and finished in the normal manner. The wood studs are slotted with a ⅛″ saw cut through the center of the wide face to within 3″ of each end. 3″ THERMAFIBER batts are installed in the stud space flush to one face, leaving a ⅝″ recess on the other side. Care must be taken to insure that nails or screws used in attaching the facing material do not penetrate into the stud slot.

FUNCTION AND UTILITY

Adaptability: May be used in any location where not subjected to a combined line and dead load in excess of 60 pounds per square foot, or as specified by local building code.

Sound Transmission: An 87½% improvement in restraining air-borne sound is obtainable by using gypsum lath and plaster with THERMAFIBER Mineral Wool Batts on slotted wood studs. The conventional wood stud partition system has an efficiency of 36 decibels as opposed to the THERMAFIBER Mineral Wool insulating sound control system, which has a 45 decibel transmission loss average.

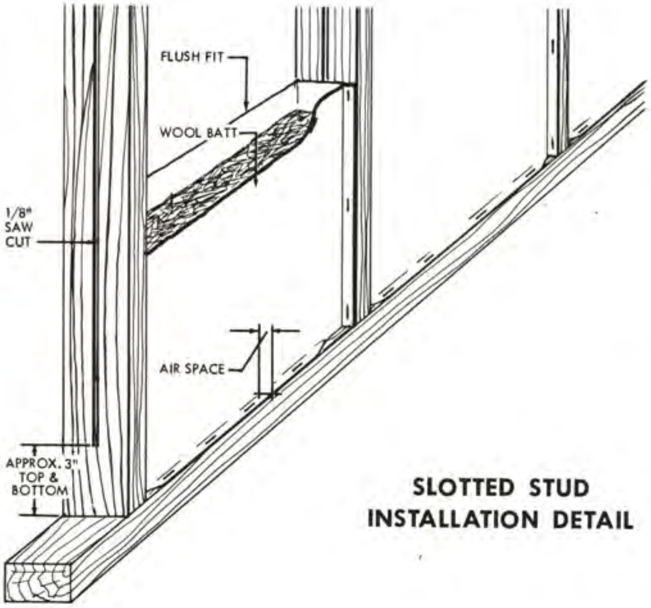
Strength: In test conducted by U.S. Gypsum, load bearing qualities were not appreciably reduced by slotting. Test data is available upon request.

Construction: All slotted studs may be nailed to the top and bottom plate in the normal manner. Wall facing materials may be attached to the stud with any suitable fastener. Care must be taken to prevent bridging the slotted stud sections together.

WOOD FRAMING REQUIREMENTS

Wood framing meeting the following minimum requirements is necessary for proper performance of all gypsum board fasteners.

1. Framework shall meet the minimum requirements of FHA and local building codes.
2. Framing members shall be straight, true, of uniform dimension, and framing shall be properly aligned.
3. All framing lumber shall be of a good grade for the intended use, and 2″x4″ nominal size or larger shall bear the grade mark of a recognized inspection agency using grading rules for lumber recommended to American Lumber Standards Committee.
4. All framing lumber shall have a moisture content not in excess of 15% at time of gypsum wallboard applications.
5. Do not attach gypsum board to extremely soft framing members.



SLOTTED STUD INSTALLATION DETAIL

Failure to observe these minimum framing requirements, which are applicable to both screw and nail attachment, will materially increase the possibility of ineffective fastening concealment, due to warping or dimensional changes. This is particularly true if framing lumber has greater than normal tendencies to warp or shrink after erection.

HEATING AND VENTILATION RECOMMENDATIONS

Framing should approach as closely as possible the moisture content it will reach in service by allowing the house, after it is enclosed, to stand as long as possible prior to the application of the gypsum board. Provide heat in winter or during damp conditions at a uniform temperature in the range of 50° to 70°F. Provide ventilation to remove excess moisture.

LIMITATIONS OF USE

Good framing is essential for proper performance of the THERMAFIBER Insulation Sound Control System. (See "Wood Framing Requirements")

To achieve good efficiency, avoid direct openings through the walls, back to back utility boxes, medicine cabinets, loose fitting or low rated sound transmission doors, or interconnecting air ducts, etc.

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*T.M. Reg. U.S. Pat. Off.

SPECIFICATIONS

SCOPE

Unless otherwise shown on plans, all materials shall be furnished and installed according to these specifications.

Wall surface material may be applied following normal procedures as recommended by the material manufacturer.

MATERIAL

Insulation shall be 3″ THERMAFIBER* Blankets (15″ or 23″) x 96″. Studs shall be 2 x 4 lumber meeting requirements as specified under "Wood Framing Requirements."

APPLICATION

THERMAFIBER Insulating Wool blankets shall be installed by fastening the blanket flanges to the side of each stud, top and bottom plates, by (stapling) (nailing) 6″ C. to C. maximum, closing all voids. Install blankets with a tight flush fit against one wall surface allowing an air space between the insulation and the opposite wall surface.

Slotted wooden studs shall be prepared before erection by centering the ⅛″ saw cut in the wide face of the stud and extending through the narrow width. Cut is to extend to within 3″ of top and bottom of stud.

SOUND TRANSMISSION LOSS DATA

SLOTTED STUD—SHEETROCK* Gypsum Wallboard

PARTITION CONSTRUCTION	Test Number	Frequency									Ave.	Partition Thickness	Weight lbs. Per Sq. Ft.	Class. (1)
		125	175	250	350	500	700	1000	2000	4000				
8′-10″ x 14′-0½″ Panel consisting of—2″ x 4″ St'd. Wood Studs 16″ C. to C. ⅝″ SHEETROCK* FIRECODE* Wallboard (Single layer each side, Screw Attached)	30 FT	17	16	34	30	35	40	42	38	44	32.9	4⅞″	6.43	34
Panel—Same as Test No. 30 FT, except 2″ x 4″ wood studs were slotted with a ⅛″ centered saw cut thru the 4″ side, continuous to within 3″ from each end.	27 FT	25	30	34	40	40	46	48	42	47	39.1	4⅞″	6.09	43
Panel—Same as Test No. 27 FT, except the addition of 3″ thick THERMAFIBER Insulating Wool batt. (Flush-one side, recessed on the other).	29 FT	31	33	42	45	49	51	51	46	50	44.2	4⅞″	6.48	48

SLOTTED STUD—ROCKLATH* Plaster Base & USG* Gypsum Plaster

5′-6½″ x 6′-9″ Panel consisting of 2″ x 4″ St'd. Wood Studs 16″ C. to C., ⅜″ ROCKLATH Plaster Base (nailed), 7/16″ plaster-sanded 1:2½, scratch double back, 1/16″ lime putty—trowel finish.	TL 61 -231	30	27	25	42	31	40	38	39	55	36	5⅜″	14.38	33
Panel—Same as Test No. TL 61-231, except 2″ x 4″ Wood studs were slotted with a ⅛″ centered saw cut thru the 4″ side, and the addition of 3″ Thick THERMAFIBER Blankets, flush one side.	TL 61 -235	39	39	45	47	45	45	47	42	54	45	5⅜″	14.75	40

RESILIENT ATTACHMENT—RC-1 Channel & SHEETROCK Gypsum Wallboard

8′-10″ x 14′-0½″ Panel consisting of 2″ x 4″ Std., Wood Studs 16″ C. to C. USG* RC-1 Metal Resilient Channel fastened to one side, with drywall screws, 24″ C. to C., horizontally. Screw applied-single layer ⅝″ SHEETROCK* Gypsum Wallboard each side.	31 FT	24	29	33	39	39	50	51	46	48	39.8	5⅜″	6.52	43
Panel—Same as Test No. 31 FT, except addition of 3″ Thick THERMAFIBER Blankets.	33 FT	32	36	42	46	52	54	58	53	54	47.3	5⅜″	6.98	52

(1) Classification index is in accordance with ASTM Procedure E90-61T

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*T.M. Reg. U.S. Pat. Off.

USG*
PERIMETER INSULATION

USG MINERAL FIBER INSULATION PRODUCTS

DESCRIPTION

USG Perimeter Insulation consists of inorganic spun mineral wool fibers mechanically formed and compressed into a uniform semi-rigid board of definite dimensions and controlled density. Applied along the perimeter of slabs or to the inside of foundations walls, USG Perimeter Insulation effectively prevents heat loss through concrete floors and walls of crawl spaces used as heating plenums. Results: warm floors and significant savings in fuel costs.

FUNCTION AND UTILITY

High Thermal Resistance—conductance "k" Factor is 0.24 per inch thickness (Btu/in/hr sq. ft. °F. at 75°F. Mean Temp) and Resistance 4.17 per inch thickness. See Product Data table page 2 for Factors for given thickness.

Noncombustible—The mineral fibers will not burn or support combustion.

Permanent—Because it is inorganic, mineral wool it will not deteriorate, is resistant to vermin and will not provide sustenance for fungi or termites.

Non-Capillary—Inorganic fibers will not wick moisture from damp or wet areas.

Resists Compression—Dense semi-rigid board (8-lbs/cu.-ft.) resists compression under the pressure of concrete slab.

Economical—Low in cost; no maintenance required.

Full Range of Thicknesses—USG Perimeter Insulation is available in ¾", 1", 1½" and 2" thicknesses to meet all insulation requirements.

FHA SPECIFICATIONS

USG Perimeter Insulations comply with MPS FHA No. 300 dated 11-1-58.

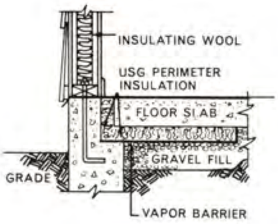
FEDERAL SPECIFICATIONS

USG Perimeter Insulations comply with HH-I-562, Type I, Class 2 (as amended).

LIMITATIONS OF USE

Perimeter Insulation should not be used below the normal water table.

APPLICATION



SPECIFICATIONS

1. Perimeter edge of concrete floor slab shall be insulated with Perimeter Insulation as manufactured by the U.S. Gypsum Company. Insulation shall be (¾") (1") (1½") (2") thick.
2. Vertical application—Inside of foundation.
   With all exterior masonry and poured concrete walls, Perimeter Insulation ——— shall be installed against the inside face of the foundation prior to back filling and before any base-layer of gravel, stone or cement slab itself is put in place. Permanent attachment is not required. Insulation may be held firmly in place by temporary bracing or the pressure of back fill. Butt edges of board together. Care should be taken so as not to damage insulation when back fill is put in place.
3. Vertical Application—Exterior of foundation.
   For exterior application trench shall be dug around exterior 12 inches or more below grade. Exposed surface of foundation shall be cleaned of dirt and painted with asphalt foundation primer. USG Perimeter Insulation ——— inches thick shall be cemented to the surface of the foundation with mastic asphalt cement butting edges of board together. Metal flashing shall be installed above insulation to shield from elements. Asbestos cement board or Portland cement stucco shall be applied over the outside exposed surface of the insulation.
4. Horizontal Application.
   Where horizontal insulation is specified USG Perimeter Insulation ——— inches thick shall be installed after gravel fill has been built up to grade and thoroughly tamped. Insulation shall be laid in place with edges pressed together and butting foundation wall or vertical insulating applied adjacent to it.
5. When called for on the drawings, a vapor barrier of 55# asphalt roll roofing shall be laid over the underbed.
6. All work shall be done by experienced contractor and completed in a neat and workmanlike manner.

*T.M. Reg. U.S. Pat. Off.

UNITED STATES GYPSUM—The Greatest Name in Building
GENERAL OFFICES • 300 WEST ADAMS STREET • CHICAGO 6, ILLINOIS
U. S. G. SALES OFFICES LOCATED AT THESE CITIES

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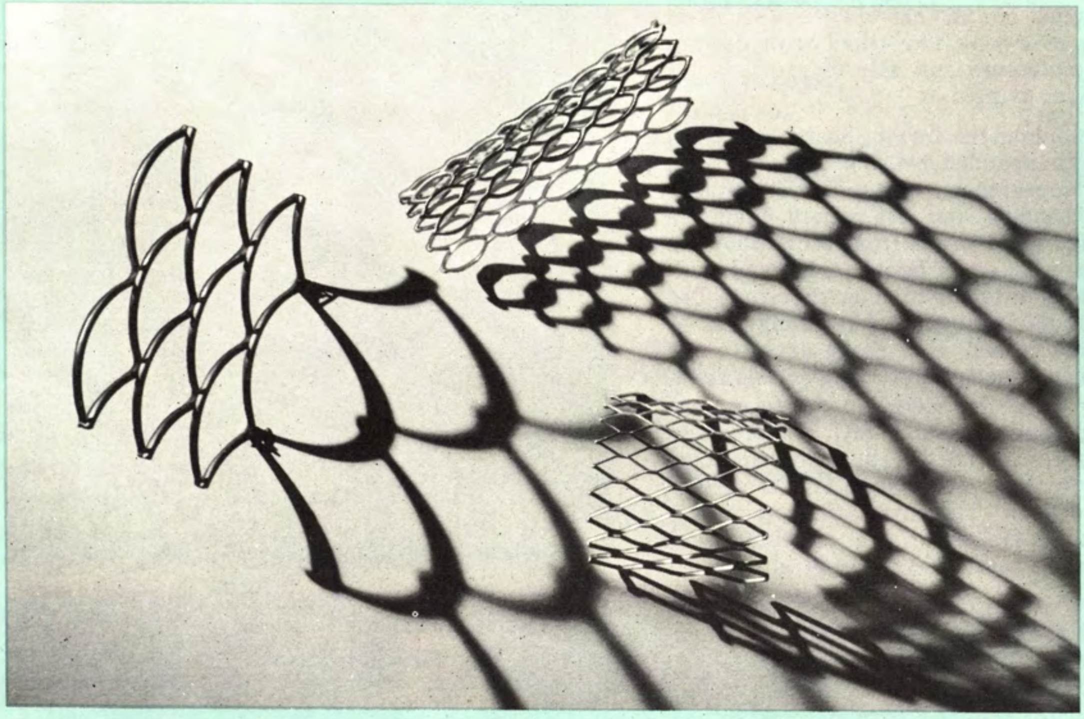
ALBUQUERQUE, N.M.
ARLINGTON, VA.
(WASHINGTON, D.C.)
ATLANTA, GA.
BALTIMORE, MD.
BIRMINGHAM, ALA.
BUFFALO, N.Y.
CHARLOTTE, N.C.
CHICAGO, ILL.
CINCINNATI, OHIO
CLEVELAND HEIGHTS, OHIO
(CLEVELAND)
CLIFTON, N.J.
(NEWARK)
DALLAS, TEXAS
DENVER, COLO.
DE WITT, N.Y.
(SYRACUSE)
GRAND RAPIDS, MICH.
HAMDEN, CONN.
(NEW HAVEN)
HARRISBURG, PA.
HEMPSTEAD, L.I., N.Y.
HOHOKUS, N.J.
HOUSTON, TEXAS
INDIANAPOLIS, IND.
JACKSONVILLE, FLA.
KANSAS CITY, MO.
LOS ANGELES, CALIF.
LOUISVILLE, KY.
MIAMI, FLORIDA
MILWAUKEE, WISC.
MINNEAPOLIS, MINN.
NEW ORLEANS, LA.
NEW YORK, N.Y.
OKLAHOMA CITY, OKLA.
OMAHA, NEBR.
PASADENA, CALIF.
PEORIA, ILL.
PHILADELPHIA, PA.
PHOENIX, ARIZ.
PITTSBURGH, PA.
PORTLAND, ORE.
RALEIGH, N.C.
RICHMOND, VA.
SACRAMENTO, CALIF.
ST. LOUIS, MO.
SALT LAKE CITY, UTAH
SAN ANTONIO, TEXAS
SAN DIEGO, CALIF.
SAN FRANCISCO, CALIF.
SAN LEANDRO, CALIF.
(OAKLAND)
SCARSDALE, N.Y.
(NEW YORK CITY)
SEATTLE, WASH.
SOUTHFIELD, MICH.
(DETROIT)
WALTHAM, MASS.
(BOSTON)
WARWICK, R.I.
(PROVIDENCE)

A.I.A. File 15-T 30-J

TECHNICAL INFORMATION

USG® EXPANDED METALS



UNITED STATES GYPSUM

1963

UNITED STATES GYPSUM

A.I.A. File 15-T 30-J

EXPANDED METALS BY UNITED STATES GYPSUM

THE SHAPE OF THINGS TO COME

At a time when our economy has demonstrated its greatest need for product innovations to stimulate consumer buying, United States Gypsum presents advanced designs in expanded metals for new ideas in architectural and product design.

Six dramatic new patterns—ARMORWEAVE, FESTOON, CATHEDRAL, WAVELENGTH, RONDO and MIN-X—join the accepted and widely used EXPAND-X expanded metal pattern to offer an exciting new series of expanded metals that open new frontiers for everyone concerned with design, manufacture and sale of products for better living.

Here, from the drawing boards at U.S.G., come expanded metals with new warmth of appearance, with greater resistance to bending and less weight than the solid metal sheets from which they are made. Sheets of metal are slit and cold-drawn into continuous patterns. The strands and bonds of resulting meshes come to rest at a sharp angle to the original plane of the sheet, adding rigidity. Expanded metals in this form have thousands of uses. U.S.G. also produces these meshes flattened by pressure rolls, for applications where a smooth surface is desired. These versatile meshes are available in carbon steel, aluminum, and in some meshes, stainless steel.

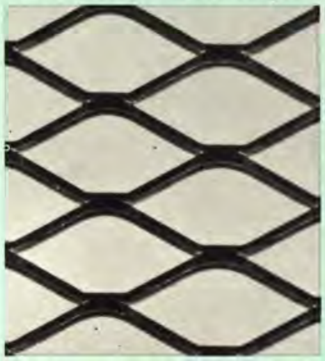
You who create, make and sell America's buildings and products can expand your horizons by adapting these decorative expanded metals to your purposes; can fashion, with new freedom, *the shape of things to come.*

AID TO ARCHITECTS AND DESIGNERS

To promote a better understanding of expanded metals and their use, and assure a satisfactory result for you; we offer design and sales service to aid architects and designers. A staff of engineers is equipped to assist in working out specific problems concerning design, fabrication, finishing and attachment of expanded metals. This service involves no obligation.

See Page 16 for a listing of offices where U.S.G. Sales Engineers and Architects Service Representatives are located.

EXPAND-X EXPANDED METAL

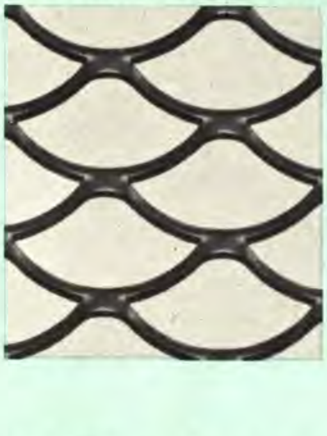


EXPAND-X is a diamond-shaped pattern of expanded metal with many applications in industrial plants and products. Its advantages over solid sheets—greater strength with less weight, visibility, free passage of light and air—make it ideally suited where protection, reinforcement, air flow and lighting are important.

When EXPAND-X is flattened in manufacture, the smooth level surface produced makes this expanded metal adaptable to hundreds of other uses.

EXPAND-X and Flattened EXPAND-X are available in a variety of weights and mesh sizes to meet varying conditions. See Pages 4 to 7 for information on these products.

DECORATIVE EXPANDED METAL



The six patterns of U.S.G. Decorative Expanded Metals are stimulating new ideas for product designers and architects everywhere. Here are materials that enhance a product's appearance and sales appeal while providing the advantages of light weight, strength and ease of fabrication.

Available in a variety of meshes—for appropriate visibility through the mesh; for air flow; for pleasing appearance; for modern functional styling. With these meshes you can achieve design treatments that add substantially to the product or building.

USG Decorative Expanded Metal is practical as well as beautiful. Special manufacturing techniques make them lighter, yet more rigid than solid sheet materials. They will not ravel when cut and may be easily welded and formed. Here, then, are materials which combine the beauty and utility so vital to the design of any product or building.

See Pages 8 to 11 for information on these products.

GRATE-X metal grating, a heavy type expanded metal.

AVAILABLE METALS

EXPAND-X and Flattened EXPAND-X manufactured from carbon steel, stainless steel and aluminum are available from stock. U.S.G. Decorative Expanded Metals are produced from carbon steel and aluminum. Other metals and alloys may be expanded to meet special requirements. Consult your nearest U.S.G. Sales Office for details and additional information. (See Page 16 for a list of offices).

FABRICATION

USG* Expanded Metals may readily be fabricated and formed in the same accustomed ways as sheet metals. They do not ravel when cut. They may be welded without difficulty, and absence of scale on the mesh facilitates perfect welds.

FINISHING

Architects and designers find many delightful color combinations in using painted, anodized or porcelain enameled USG Expanded Metals in correlation with colored fabrics or other materials. Painting and other types of finishing offer no problems with USG Expanded Metals. The surfaces are readily accessible to paint. All the accepted industrial methods of application may be used. USG aluminum Expanded Metal is easily anodized. Either steel or aluminum expanded metals can be successfully porcelain enameled in a wide range of colors. Additional information on finishing USG Expanded Metals may be found on Page 13.

NATIONWIDE DISTRIBUTION

Whatever your need for expanded metal, a U.S.G. Expanded Metal Distributor is ready to serve you. His warehouse is stocked with USG Expanded Metals to assure you of the prompt service you need *when you need it.* Contact the U.S.G. Sales Office for the name of the nearest distributor.

"USG", "GRATE-X" and "EXPAND-X" are registered trade-marks, and "RONDO", "FESTOON", "WAVELENGTH", "CATHEDRAL", "MIN-X", and "ARMORWEAVE" are trade-marks owned by the United States Gypsum Company, and all identify the particular expanded metal manufactured only by United States Gypsum Company.

REPRESENTATIVE USES

In Products

- Air Duct Outlets
- Conveyor Guards
- Annealing Baskets
- Grain Driers
- Machine Guards
- Intake Grilles
- Harvesting Baskets
- Display Racks
- Filter Screens
- Tool Stand Shelves
- Drying Trays
- Displays
- Range Hood Vent
- Lawn Mower Guard
- Air Conditioner Grille
- Lamps
- Automobile Grille
- Beverage Racks
- Cabinet Doors
- Furnace Grilles
- Porch Furniture
- Breakfront Grilles
- Freezer Vent
- TV and Radio Grilles
- Book Shelves
- Screen Door Guards
- Sign Backgrounds

Architectural

- Areaway Guards
- Shelving
- Storage Lockers
- Stairway Enclosures
- Laundry Partitions
- Factory Enclosures
- Skylight Guards
- Ornamental Screens
- Room Dividers
- Ceilings
- Partitions
- Accent Points
- Railing Guards
- Decorative Trim
- Patio Coverings
- Building Facades
- Ornamental Grilles
- Sun Screens
- Jalousie Covers
- Shutters
- Fencing
- Louvers
- Awnings
- Space Dividers
- Folding Door Grilles

Gratings, Walkways, Platforms, Stair Treads, Flooring, Scaffolding.

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ARCHITECTURAL: Decorative Facia & Sun Shade

IN PRODUCT: Decorative Grille

EXPAND-X*

EXPANDED METAL

DESCRIPTION

Below: are the USG Expanded Metals which impart their advantages to thousands of applications to make them lighter, stronger and more attractive.

EXPAND-X Expanded Metal is the diamond-shaped product in unflattened form. The strands and bonds are at a sharp angle to the original plane of the sheet. This factor adds strength to the expanded product.

FLATTENED EXPAND-X is made by passing the diamond-shaped expanded metal between pressure rolls. These flatten the material so that strands and bonds are in the same plane. This produces a material suitable for applications where a smooth flat surface is desirable.

DECORATIVE EXPANDED METAL offers design possibilities unlimited. Each expanded metal pattern is versatile enough to serve as the main design element, or to lend a valuable assist in the form of ornamental decoration.

The six decorative patterns—Armorweave, Festoon, Cathedral, Wavelength, Rondo and Min-x—retain the many important practical advantages of Expand-x and provide a design motif about which the architect or designer can exercise his personal creativity.

See Pages 8 to 11 for information on these products.

GRATE-X* Expanded Metal is a heavy type metal grating.

PROJECTION MESH is produced with small toothlike projections on the upper surface for maximum anti-skid qualities.

See Page 16 for detailed information on GRATE-X and PROJECTION MESH.

ADVANTAGES

Made in a wide selection of gauges and sizes. Light weight, with the other "plus" features of expanded metal compared to the original solid sheet. Since its introduction it has been a new material with a "thousand and one" new uses. It can be cut without raveling, and formed or welded.

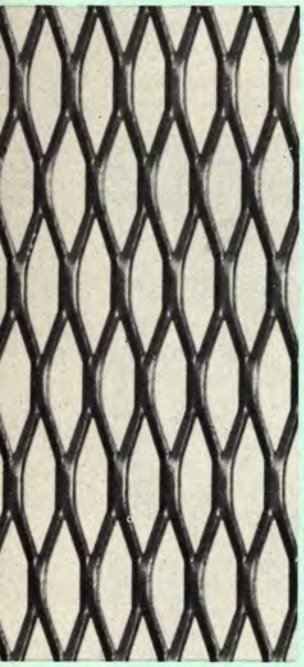
Choice of Materials. Carbon steel, stainless steel, and aluminum are available from stock. Copper, brass, bronze and other expandable metals may be had on special order.

Fabricating and Finishing

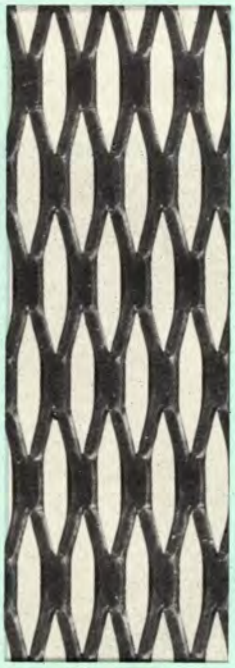
Welding—Arc, resistance or brazing methods can be used. Absence of scale on the mesh facilitates welding processes and makes a first class weld possible.

Painting—Both Expand-x and Flattened Expand-x Expanded Metal are shipped unpainted. The material can be painted, but should be clean and free from grease, and hung at an angle to prevent collecting of paint at bonds.

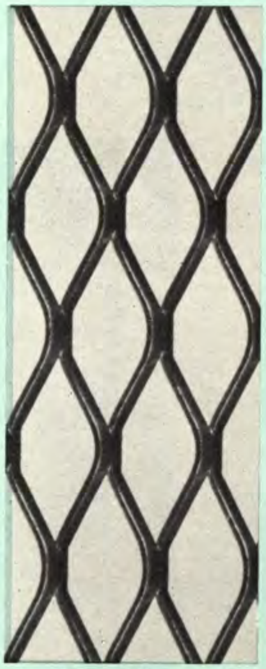
FULL SIZE



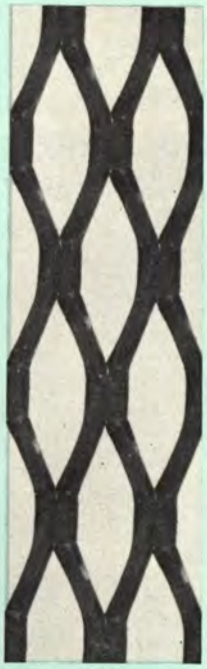
¼″ No. 20
EXPAND-X



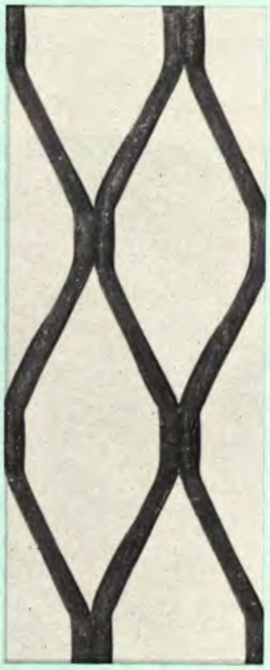
¼″ No. 18
EXPAND-X



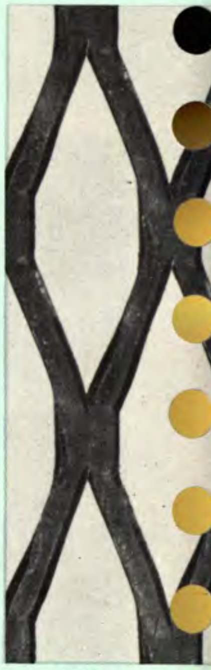
½″ No. 18
FLAT. EXPAND-X



½″ No. 13
FLAT. EXPAND-X



¾″ No. 13
FLAT. EXPAND-X



¾″ No. 9
FLAT. EXPA

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*T.M. Reg. U.S. Pat. Off.

FUNCTION AND UTILITY

CARBON STEEL EXPAND-X. Carbon Steel EXPAND-X and FLATTENED EXPAND-X Expanded Metal, in addition to the inherent characteristics of solid sheet steel, combine light weight with the many other unique advantages of expanded metal over its original sheet form.

There are no rivets or welded joints except where units are joined. Strands of unflattened expanded metal are at an angle, thus distributing strain in many directions to the supporting structure and improving rigidity and bending resistance.

The large percentage of open area permits maximum passage of air and light.

The material can be readily cut into desired shapes without danger of raveled strands, and may be welded, bent and formed, drawn and flared. It is economical to apply and maintain. Various weights and sizes are available to meet varying needs.

There are a vast number of applications and uses for carbon steel EXPAND-X and FLATTENED EXPAND-X.

STAINLESS STEEL EXPAND-X. Stainless EXPAND-X and FLATTENED EXPAND-X Expanded Metal offer industry a material with the happy combination of the advantages inherent in stainless steel plus the advantages peculiar to the design of expanded metal. To engineers and product designers, this means new and improved products and equipment.

The stainless material is highly resistant to most types of corrosion and oxidation. This makes it ideal for applications in chemical, oil, textile, food processing, meat packing, dairy and beverage industries; household, surgical and marine equipment and electrical appliances.

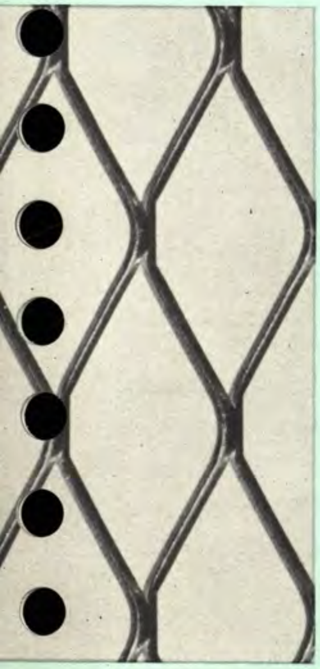
For further information on stainless EXPAND-X and FLATTENED EXPAND-X Expanded Metal and where it can be used, write for our technical pamphlet, "Stainless EXPAND-X".

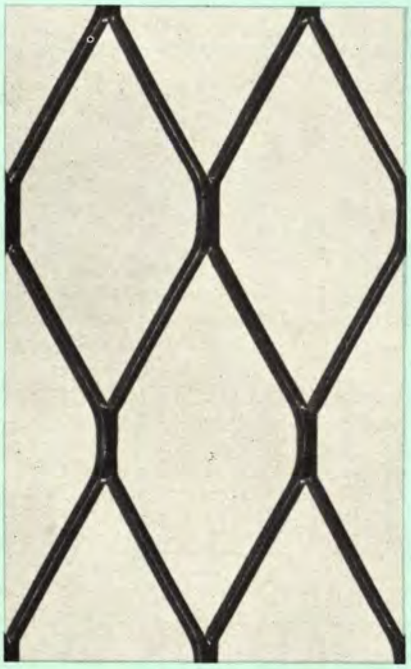
ALUMINUM EXPAND-X. Aluminum EXPAND-X and FLATTENED EXPAND-X—a new material for industry, with all the advantages of aluminum, plus—lighter weight—a clean attractive design, which are added in the expanding process. Light weight—almost featherlight—with the unflattened expanded metal having many better performance properties than in its original sheet form—permits lighter weight equipment and appliances to ease work in industry and in the home.

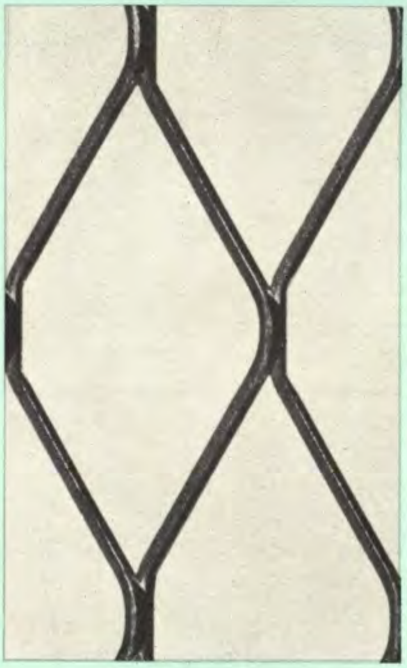
The highly pleasing appearance of Aluminum EXPAND-X and FLATTENED EXPAND-X Expanded Metal—its clean, geometric design, its lasting, corrosion-resisting, satiny finish—suggest a multitude of uses for products of unusual beauty. Food processing and chemical industries, especially, will find many uses for this versatile material. Maintenance costs of the aluminum material are negligible.

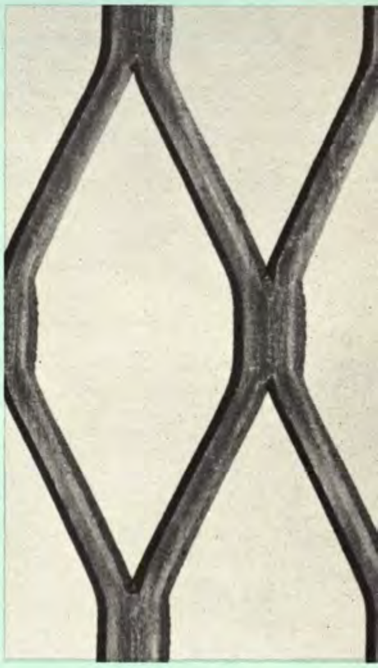
Aluminum EXPAND-X and FLATTENED EXPAND-X Expanded Metal fabricate easily, can be cut without raveling and be formed or welded.

The wide variety of uses and applications of aluminum EXPAND-X and Flattened EXPAND-X includes many in the automotive, building, chemical, textile, mining, food processing and meat packing industries; electrical appliances, furniture, household, farming, photographic and sports equipment. For further information write for our technical pamphlet, "Aluminum EXPAND-X Expanded Metal."


¾" No. 16
EXPAND-X

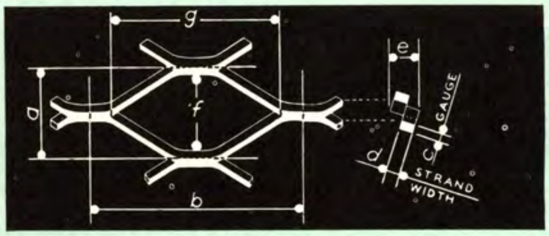

1" No. 16
EXPAND-X


1½" No. 13
EXPAND-X


1½" No. 9
FLAT. EXPAND-X

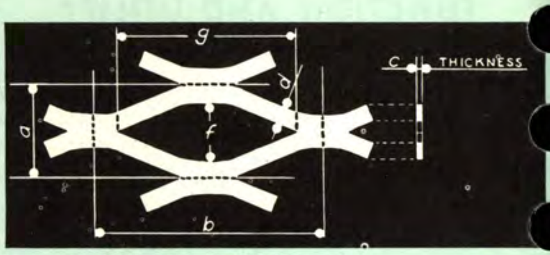
EXPAND-X
EXPANDED METAL

TECHNICAL DATA



EXPAND-X

All weights and dimensions are approximate



FLATTENED EXPAND-X

Styles Available	Wt. Lbs. C Sq. Ft.		Diamond Size a x b inches	Opening Size f x g inches	Strand c x d inches	Overall Thick-ness e inches	Standard Sheet Size		Per Cent Open Area	U.S. Std. Gauge Steel Used
	Black	Galv.					width	length		
Carbon Steel EXPAND-X										
¼′—No. 20	94	131	.26 x1.0	.125x .687	.036x.076	.125	4′	8′	40	20
¼′—No. 18	117	159	.26 x1.0	.125x .687	.047x.076	.125	4′	8′	40	18
½′—No. 40	40	60	.497x1.195	.406x .937	.047x.050	.110	4′	8′	83	18
½′—No. 20	43	59	.459x1.195	.375x .875	.036x.066	.134	4′	8′	71	20
½′—No. 18	70	84	.507x1.195	.375x .950	.047x.089	.161	4′ & 6′	8′ & 10′	65	18
½′—No. 16	87	104	.507x1.195	.375x .890	.059x.089	.159	4′ & 6′	8′	65	16
½′—No. 13	146	175	.503x1.2	.350x .900	.089x.098	.199	4′ & 6′6″	8′	61	13
¾′—No. 34	34	51	.865x2.0	.750x1.688	.059x.060	.129	4′	8′	85	16
¾′—No. 16	54	65	.880x2.0	.700x1.640	.059x.095	.183	4′ & 6′	8′ & 10′	76	16
¾′—No. 13	80	93	.880x2.0	.734x1.640	.089x.095	.185	4′ & 6′	8′ & 10′	76	13
¾′—No. 10	119	133	.889x2.0	.675x1.563	.089x.141	.277	4′ & 6′	8′	69	13
¾′—No. 9	180	202	.857x2.0	.600x1.45	.134x.137	.290	4′ & 6′	8′ & 10′	68	10
1′ —No. 16	47	55	1.01 x2.375	.875x1.937	.059x.095	.196	4′	8′	82	16
1½′—No. 16	40	47	1.35 x3.125	1.180x2.813	.059x.112	.210	4′	8′	85	16
1½′—No. 13	60	68	1.35 x3.125	1.200x2.688	.089x.112	.213	4′ 5′ & 6′	8′ & 10′	85	13
1½′—No. 10	79	87	1.33 x3.00	1.156x2.52	.089x.140	.248	4′ & 6′	8′ & 10′	81	13
1½′—No. 9	119	129	1.33 x3.00	1.140x2.43	.134x.141	.289	4′ & 6′	8′ & 10′	76	10
1½′—No. 6	250	273	1.33 x3.00	1.000x2.312	.198x.203	.410	4′ & 6′	8′ & 12′	70	6
Carbon Steel FLATTENED EXPAND-X										
¼′—No. 20	87	125	.26 x1.03	.088x .70	.031x.086	.031	4′	8′	34	20
¼′—No. 18	113	159	.26 x1.03	.088x .70	.042x.086	.042	3′ & 4′	8′	34	18
½′—No. 40	39	60	.497x1.23	.371x1.00	.038x.063	.038	3′ & 4′	8′	75	18
½′—No. 20	41	42	.438x1.25	.313x .938	.032x.070	.032	3′ & 4′	8′	64	20
½′—No. 18	66	88	.507x1.26	.289x1.00	.038x.109	.038	3′ & 4′	8′ & 10′	58	18
½′—No. 16	82	112	.507x1.26	.301x1.00	.050x.103	.050	3′ & 4′	8′ & 10′	60	16
½′—No. 13	138	175	.503x1.26	.259x .97	.070x.122	.070	3′ & 4′	8′	52	13
¾′—No. 34	32	51	.865x2.10	.709x1.75	.045x.078	.045	4′	8′	83	16
¾′—No. 16	51	71	.880x2.10	.650x1.75	.048x.115	.048	3′ & 4′	8′ & 10′	74	16
¾′—No. 14	68	70	.880x2.10	.642x1.75	.063x.119	.063	3′ & 4′	8′	73	14
¾′—No. 13	76	93	.880x2.10	.642x1.75	.070x.119	.070	3′ & 4′	8′ & 10′	73	13
¾′—No. 9	171	195	.857x2.10	.529x1.63	.110x.164	.110	3′ & 4′	8′ & 10′	62	10
1′ —No. 16	46	55	1.01 x2.50	.780x2.06	.048x.115	.048	3′ & 4′	8′	78	16
1½′—No. 16 (Lt.)	29	40	1.35 x3.25	1.14 x2.88	.048x.103	.048	3′ & 4′	8′	85	16
1½′—No. 16 (Hvy.)	38	44	1.35 x3.19	1.13 x2.69	.048x.123	.048	3′ & 4′	8′	85	16
1½′—No. 14	53	63	1.35 x3.28	1.07 x2.88	.063x.138	.063	3′ & 4′	8′	80	14
1½′—No. 13	57	68	1.35 x3.28	1.07 x2.88	.070x.138	.070	3′ & 4′	8′ & 10′	80	13
1½′—No. 9	113	129	1.35 x3.25	1.00 x2.62	.106x.175	.106	3′ & 4′	8′ & 10′	74	10
Stainless Steel EXPAND-X										
½′—No. 18	73	....	.475x1.20	.359x .906	.050x.082	.154	3′ & 4′	8′	65	18
½′—No. 16	91	....	.475x1.20	.359x .875	.062x.082	.161	3′ & 4′	8′	65	16
¾′—No. 18	48	....	.828x2.00	.719x1.656	.050x.101	.176	3′ & 4′	8′	77	18
¾′—No. 16	60	....	.828x2.00	.672x1.656	.062x.101	.178	3′ & 4′	8′	77	16
¾′—No. 13	91	....	.828x2.00	.672x1.563	.093x.101	.192	3′ & 4′	8′	77	13
¾′—No. 9	205	....	.828x2.00	.500x1.375	.140x.152	.294	3′ & 4′	8′	65	10
1½′—No. 16	45	....	1.333x3.00	1.180x2.813	.062x.115	.296	3′ & 4′	8′	83	16
1½′—No. 13	68	....	1.333x3.00	1.156x2.640	.093x.115	.221	3′ & 4′	8′	83	13
1½′—No. 9	137	....	1.333x3.00	1.125x2.500	.140x.154	.267	3′ & 4′	8′	77	10
Stainless Steel FLATTENED EXPAND-X										
½′—No. 18	69	....	.475x1.26	.297x1.031	.042x.093	.042	3′ & 4′	8′	61	18
½′—No. 16	86	....	.475x1.26	.297x1.031	.052x.093	.052	3′ & 4′	8′	61	16
¾′—No. 18	46	....	.828x2.10	.656x1.813	.042x1.08	.042	3′ & 4′	8′	74	18
¾′—No. 16	57	....	.828x2.10	.672x1.813	.052x.108	.052	3′ & 4′	8′	74	16
¾′—No. 13	88	....	.828x2.10	.578x1.781	.079x.108	.079	3′ & 4′	8′	74	13
¾′—No. 9	198	....	.828x2.10	.500x1.563	.119x.160	.119	3′ & 4′	8′	61	10
1½′—No. 16	43	....	1.333x3.15	1.031x2.875	.052x.124	.052	3′ & 4′	8′	81	16
1½′—No. 13	66	....	1.333x3.15	1.016x2.525	.079x.124	.079	3′ & 4′	8′	81	13
1½′—No. 9	133	....	1.333x3.15	.906x2.658	.119x.165	.119	3′ & 4′	8′	75	10

NOTE—All dimensions and weights are approximate

Styles Available	Wt. Lbs. C Sq. Ft.	Diamond Size a x b inches	Opening Size f x g inches	Strand c x d inches	Overall Thickness e inches	Standard Sheet Size		Per Cent Open Area	B & S Gauge No.	Equivalent Thickness In Steel (USS Gauge No.)
						width	length			
Aluminum EXPAND-X										
½"—No. .051	27	.507x1.195	.375x .950	.051x.089	.152	3′ & 4′	8′	65	16	18
½"—No. .081	44	.507x1.195	.375x .890	.081x.089	.178	3′ & 4′	8′	65	12	14
¾"—No. .051	17	.880x2.000	.700x1.640	.051x.095	.192	3′ & 4′	8′	78	16	18
¾"—No. .081 (Lt.)	32	.880x2.000	.700x1.640	.081x.095	.211	3′ & 4′	8′	78	12	14
¾"—No. .081 (Hvy.)	41	.880x2.000	.734x1.640	.081x.141	.270	3′ & 4′	8′	68	12	14
¾"—No. .125	65	.889x2.000	.675x1.563	.125x.141	.292	3′ & 4′	8′	68	8	11
1½"—No. .081	22	1.350x3.000	1.200x2.563	.081x.112	.226	3′ & 4′	8′	83	12	14
1½"—No. .125	43	1.330x3.000	1.140x2.500	.125x.141	.269	3′ & 4′	8′	79	8	11
Aluminum FLATTENED EXPAND-X										
½"—No. .051	25	.509x1.250	.328x1.000	.045x.091	.045	3′ & 4′	8′	64	16	18
½"—No. .081	41	.525x1.271	.297x1.000	.067x.103	.067	3′ & 4′	8′	59	12	14
¾"—No. .051	16	.893x2.125	.625x1.750	.040x.104	.040	3′ & 4′	8′	76	16	18
¾"—No. .081 (Lt.)	30	.893x2.125	.635x1.750	.070x.120	.070	3′ & 4′	8′	72	12	14
¾"—No. .081 (Hvy.)	38	.893x2.125	.547x1.750	.070x.165	.070	3′ & 4′	8′	63	12	14
¾"—No. .125	61	.906x2.156	.563x1.750	.095x.163	.095	3′ & 4′	8′	63	8	11
1½"—No. .081	20	1.375x3.125	1.094x2.625	.055x.144	.055	3′ & 4′	8′	77	12	14
1½"—No. .125	40	1.313x3.125	.938x2.625	.080x.194	.080	3′ & 4′	8′	70	8	11

AVAILABLE METALS

CARBON STEEL

Units are formed from soft open hearth steel sheets.

Finishes—Carbon steel EXPAND-X and Flattened EXPAND-X Expanded Metal is shipped unpainted and without special finishes. EXPAND-X will take most any type of coating. Nickel, chrome, copper, or vacuum plating; porcelain enameling or a good paint job can be given to this material because it has a smooth surface and is readily adapted to high grade finishing. Both EXPAND-X and Flattened EXPAND-X can be rubber coated either by the anodic process or by dipping.

STAINLESS STEEL

Units are formed from alloy Type 304, 18-8 (18 chrome, 8 nickel) austenitic stainless sheets. Certain other alloy types of expanded stainless steel can be furnished upon request.

Finish—Shipped unbuffed and unpolished.

ALUMINUM

Units are formed from aluminum alloy type 3003-H14. While other alloy types may be adaptable to expanding, 3003-H14 was found to be best suited to the expanding operation, and was also chosen because of its wide utility, high corrosion resistance, adequate strength, and low cost. Units formed from this alloy can be either anodized or porcelain enameled.

Finish—Shipped unbuffed and unpolished.

ORDERING INFORMATION

Style—The style numbers designated the various meshes. The first figure is the nominal width of the diamond. The second figure identifies the style. In some cases, this figure corresponds with the gauge of the sheet before expanding. Specify regular or flattened sheets.

Specifying Sheet Size

Width—The width of the sheet is measured the *short way of the diamond* (SWD).

Length—The length of the sheet is measured the *long way of the diamond* (LWD).

When ordering expanded metal specify "SWD" and "LWD" after the width and length of the sheet. Give width of the sheet first.

Example: A sheet 36" the short way of the diamond by 96" the long way of the diamond should be written.—

36" SWD x 96" LWD

(Note SWD dimension is given first)

TYPES OF SHEARING AVAILABLE

SIDE SHEARING—(Parallel to long dimension of diamond.)

Random (Type "A") Shearing—Cut to width (SWD) specified, with tolerance of plus or minus 1/16". This type of shearing will usually leave jagged edges.

Bond (Type "AA") Shearing—Cut on center line of first bond *over* specified width. Tolerance, minus 0, plus ½ diamond.

Limitations: Bond shearing cannot be furnished on meshes smaller than ½" nor on ½" No. 40 or ¾" No. 34 EXPAND-X or Flattened EXPAND-X.

Sizing—(Flattened EXPAND-X only). Sizing is an operation that provides Bond shearing, and stretching to a specified width (SWD). Limited to ¾" and 1½" meshes in carbon steel only, not heavier than No. 13 gauge. All orders for sized Flattened EXPAND-X subject to our ability to produce. Sizing tolerance is plus or minus 1/16".

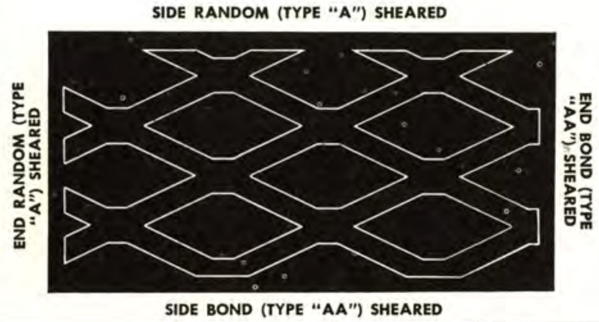
END SHEARING—(Parallel to short dimension of diamond.)

Random (Type "A") Shearing—Cut to length (LWD) specified, with tolerance of plus or minus 1/16". This type of shearing will usually leave prongs at both ends.

Bond (Type "AA") Shearing—Cut to length (LWD) specified, with tolerance of plus or minus 1/16". One end to be cut on center line of bond.

Exception: When orders specify bond cutting *both ends*, material will be sheared to nearest bond over specified dimension. Tolerance will be minus 0, plus ½ diamond.

SQUARENESS—Maximum "out of squareness" of all sheared material (when all four sides are sheared), shall not exceed 1/16" per foot of length.


SIDE RANDOM (TYPE "A") SHEARED
END RANDOM (TYPE "A") SHEARED
END BOND (TYPE "AA") SHEARED
SIDE BOND (TYPE "AA") SHEARED

DECORATIVE EXPANDED METALS

DESCRIPTION

The six decorative patterns of USG Expanded Metal, ARMORWEAVE, FESTOON, CATHEDRAL, WAVELENGTH, RONDO and MIN-X, offer the Architect and Designer countless new design possibilities. These attractive, functional and economical materials are produced in both aluminum and carbon steel.

In manufacture, sheets of metal are slit and cold-drawn into continuous mesh patterns. The strands and bonds of the resulting meshes come to rest at a sharp angle to the original sheet. This makes the expanded mesh more rigid than a solid sheet and gives it a three-dimensional effect which adds texture. USG Expanded Metal in this form is called "Type R". For applications where a smooth surface is desired, a flattened form of each pattern except ARMORWEAVE and 1″ CATHEDRAL is produced by cold-rolling the mesh after expansion. Flattened meshes are designated as "Type F".

NOTE REGARDING POSITIONING: You may wish to rotate the expanded metal 90° or 180° from the positions shown in the adjacent photographs. This will achieve varying effects particularly with styles such as FESTOON, WAVELENGTH *and* CATHEDRAL *and positioning of the mesh should be indicated on your drawings.*

ARMORWEAVE, a sturdy, massive, handsome mesh pattern, is produced in ½″, 1½″ and 4″ styles to adapt to varying proportion requirements. Its wide-offset strands and bonds give ARMORWEAVE several unique and valuable properties. Because of them, ARMORWEAVE has excellent shading and concealing power, pleasing depth and texture, and added strength and rigidity. Yet this mesh retains a high percentage of open area for passage of air and usable light. These reasons make ARMORWEAVE an ideal material to use for ventilation panels and grilles in appliances and other consumer goods.

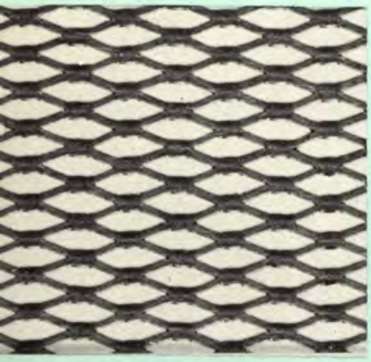
ARMORWEAVE has many potential architectural applications too. Its properties make it a practical, and economical, material to specify for exterior facias and sunshades. ARMORWEAVE placed vertically gives 100% shading at a 45° profile angle. In many cases, initial savings on air-conditioning equipment will more than pay for the entire ARMORWEAVE sunshading installation.

FESTOON, a light, airy mesh pattern with a maximum percentage of open area is also produced in ½″, 1½″ and 4″ styles. Combined with its attractive appearance, these characteristics make it an excellent material to specify for space dividers, decorative grilles, railing guards, etc.

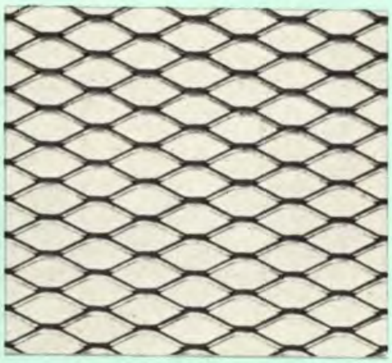
CATHEDRAL, with its long, thin modern lines, may be placed as shown or rotated 90° to provide a horizontal or vertical accent.

MIN-X, a miniature mesh, is produced in five strand widths to give it a wide range of concealing power. This light-weight mesh is perfect for many grille and ornamental trim applications.

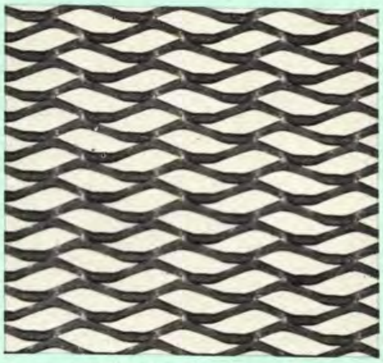
WAVELENGTH & RONDO. The unique and distinctive appearance of these two meshes warrants their consideration for many uses; particularly adaptable as accent points and decorative grilles and railing guards.



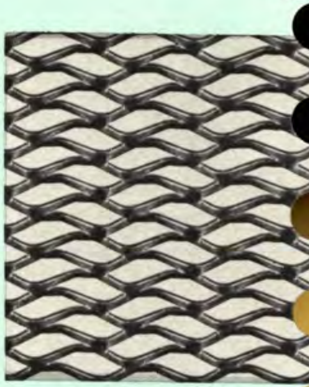
3/16″ MIN-X Type F



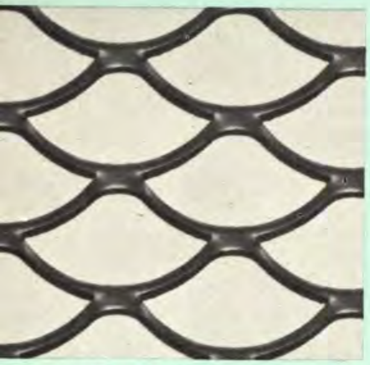
3/16″ MIN-X Type R



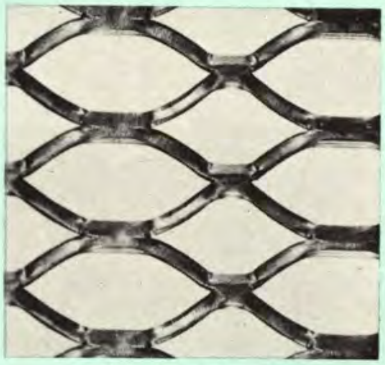
3/16″ WAVELENGTH Type F



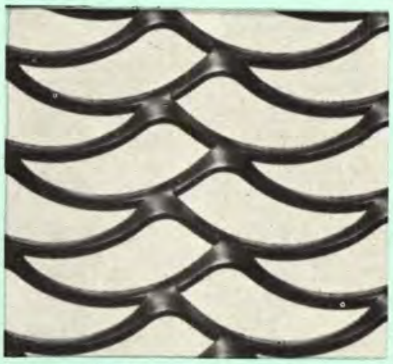
3/16″ WAVELENGTH Type



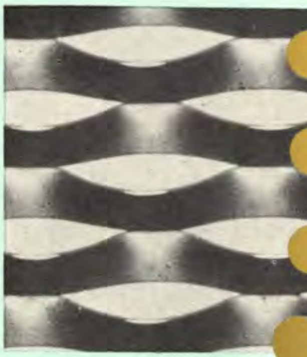
1/2″ FESTOON Type R



1/2″ RONDO Type R



1/2″ WAVELENGTH Type R



1/2″ ARMORWEAVE Type R

FUNCTION & UTILITY

Practical, as Well as Beautiful—USG Expanded Metals are lighter, yet more rigid than a solid sheet. They will not ravel when cut, are readily fabricated with standard equipment and techniques, may be framed with standard sections and attached by welding, bolting or riveting. Typical edging and framing materials and details are shown on Pages 14 and 15.

Finishes Beautifully—The potential of USG Expanded Metal for architectural use is enhanced by the variety of finishes which may be applied to provide appropriate color and also added corrosion resistance. It is recommended that aluminum meshes which are to be erected without finishing be thoroughly cleaned before erection to eliminate dirt, soot and oils which could have accumulated. See table of common finishing techniques on page 13.

Provides Opportunity for Design Creativity—The USG Decorative Expanded Metals provide a design motif about which the individual can exercise his personal creativity.

Appropriate Visibility Through the Mesh—A wide range of translucency is afforded by the various mesh designs, yet all retain a high percentage of open area for passage of light and air.

RECOMMENDATIONS & LIMITATIONS

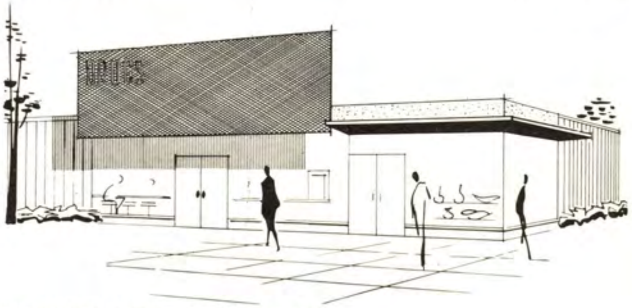
If an aluminum mesh is attached to a steel frame, a gasket of rubber or other non-conductor should be used to prevent galvanic corrosion.

The mesh should be rigidly attached to the framing at approximately 6″ centers.

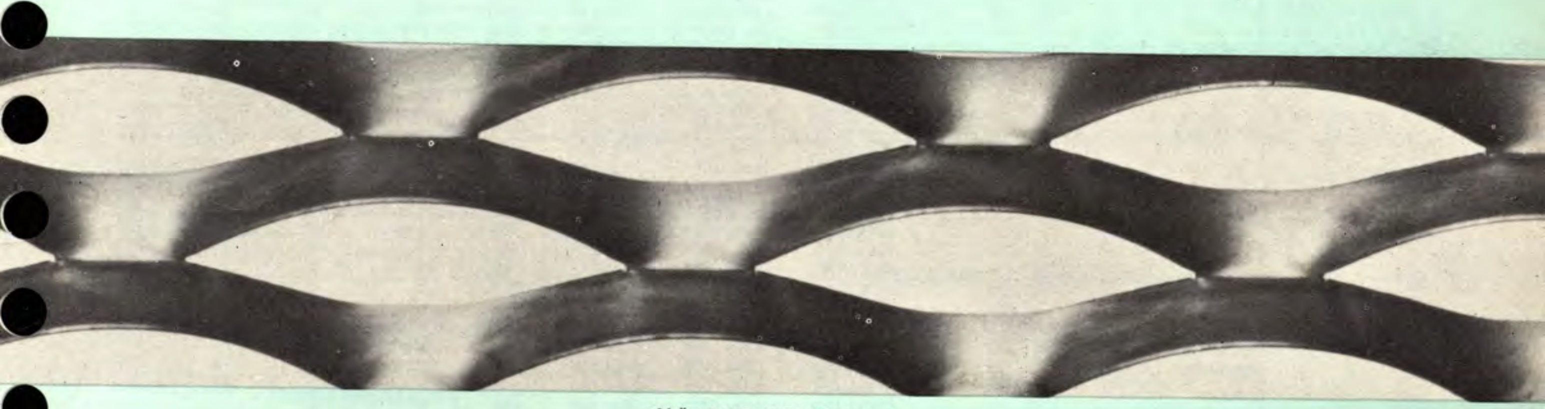
Bending decorative expanded metal on a very short radius, particularly when repeated, may cause fracturing.

ROOM DIVIDER

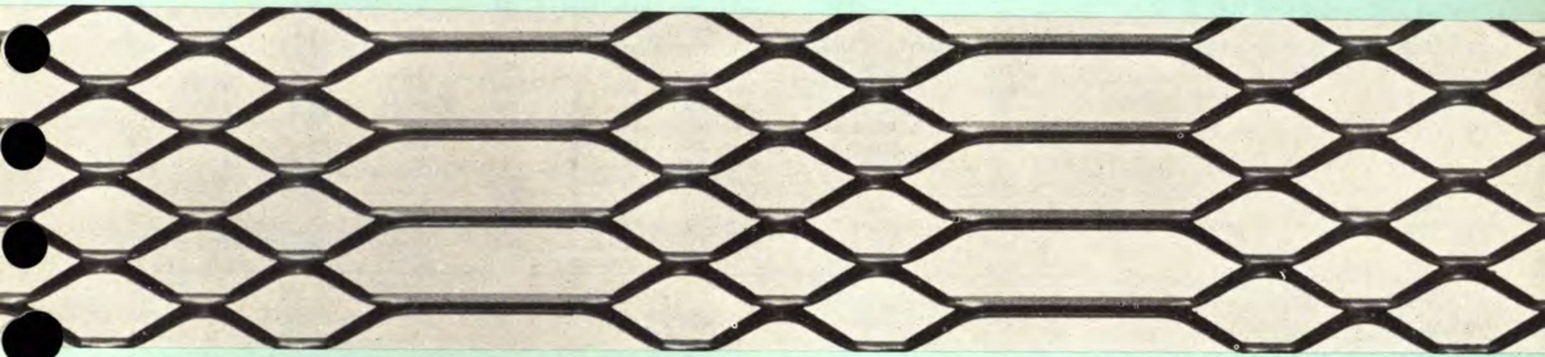
HI FI GRILLE



SUNSHADE & DECORATIVE FRONT



1½″ ARMORWEAVE Type R

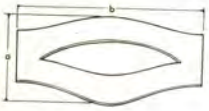
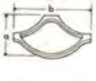
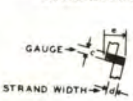
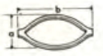
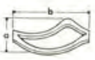


½″ CATHEDRAL Type R

DECORATIVE EXPANDED METAL

TECHNICAL DATA

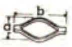
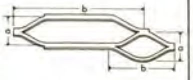
(ALL DIMENSIONS AND WEIGHTS ARE APPROXIMATE.) "a" = SWO (Short Way of the Opening.) "b" = LWO (Long Way of the Opening.)

Pattern	Material	Reg. Flat.	Style Designation	Design Size a x b (inches)	Opening Size (inches)	Strand Size c x d (inches)	Overall Thickness e (inches)	Standard Sheet Size		Per Cent Open Area	Wt.—lbs. Per 100 Sq. Ft.
								Width (SWO)	Length (LWO)		
ARMORWEAVE	Carbon Steel	R	½" #20	.6 x1.20	.410x .938	.036x.200	.219	4′	8′	34	100
			½" #18	.6 x1.20	.375x .938	.048x.200	.219	4′	8′	34	133
			½" #16	.6 x1.20	.375x .938	.060x.200	.219	4′	8′	34	166
			1½" #20 (L)	1.33 x3.00	.71 x2.26	.036x.500	.500	4′	8′	25	113
			*1½" #20 (H)	1.50 x3.00	.65 x2.28	.036x.675	.600	4′	8′	10	135
			1½" #18 (L)	1.37 x3.00	.70 x2.26	.048x.500	.540	See Footnote 1		27	146
			1½" #18 (H)	1.50 x3.00	.54 x2.10	.048x.675	.550	See Footnote 1		10	180
			1½" #16 (L)	1.37 x3.00	.70 x2.30	.060x.500	.570	4′	8′	27	183
			*1½" #16 (H)	1.50 x3.00	.48 x2.03	.060x.675	.550	4′	8′	10	226
			4" #16 (L)	3.44 x8.00	1.625x6.25	.059x1.25	1.187	4′	8′ & 10′	30	182
			*4" #16 (H)	2.75 x8.00	.55 x5.00	.059x1.25	1.00	4′	8′ & 10′	20	224
			*4" #13 (L)	3.44 x8.00	1.625x6.25	.089x1.25	1.187	4′	8′ & 10′	30	273
			*4" #13 (H)	2.75 x8.00	.60 x5.00	.089x1.25	1.00	4′	8′ & 10′	21	335
	Aluminum	R	½" .051	.6 x1.20	.375x .938	.051x.200	.219	4′	8′	34	48
			½" .081	.6 x1.20	.350x .938	.081x.200	.219	4′	8′	34	77
			1½" .051 (L)	1.24 x3.00	.52 x2.10	.051x.500	.500	See Footnote 1		21	59
			1½" .051 (H)	1.47 x3.00	.40 x2.00	.051x.675	.470	See Footnote 1		10	67
			1½" .081 (L)	1.26 x3.00	.52 x2.10	.081x.500	.530	See Footnote 1		23	91
			1½" .081 (H)	1.46 x3.00	.43 x2.00	.081x.675	.520	See Footnote 1		10	106
			*4" .081 (L)	3.0 x8.00	1.25 x6.00	.081x1.25	1.187	4′	8′ & 10′	20	96
			4" .081 (H)	2.75 x8.00	.50 x5.30	.081x1.25	1.00	4′	8′ & 10′*	18	103
FESTOON	Carbon Steel	R	½" #20	.625x1.20	.507x .938	.036x.090	.175	4′	8′	71	43
			½" #18	.625x1.20	.500x .938	.048x.090	.175	4′	8′	71	58
			½" #16	.625x1.20	.500x .938	.060x.090	.175	4′	8′	71	72
			*1½" #16	1.50 x3.00	1.375x2.625	.060x.112	.217	4′	8′	85	37
			*1½" #13	1.50 x3.00	1.313x2.625	.089x.112	.236	4′	8′	81	56
			*1½" #9	1.50 x3.00	1.25 x2.50	.135x.141	.292	4′	8′	81	110
			*4" #9	3.75 x8.00	3.50 x7.25	.134x.230	.500	4′	8′ & 10′	90	68
			*4" #4	3.75 x8.00	3.375x7.0	.223x.230	.500	4′	8′ & 10′	88	114
		F	½" #20	.688x1.20	.550x1.00	.030x.100	.030	8′	4′	64	39
			½" #18	.688x1.20	.540x1.00	.040x.100	.040	8′	4′	64	52
			½" #16	.688x1.20	.540x1.00	.051x.100	.051	8′	4′	64	65
			*1½" #16	1.688x3.00	1.438x2.625	.052x.125	.052	8′	4′	79	34
			*1½" #13	1.688x3.00	1.438x2.625	.071x.140	.071	8′	4′	81	51
			*1½" #9	1.75 x3.00	1.25 x2.50	.110x.204	.110	8′	4′	75	101
Typical Type-R Bond Cross Section	Aluminum	R	½" .051	.625x1.20	.507x .938	.051x.090	.175	4′	8′	71	21
			*½" .081	.625x1.20	.467x .938	.081x.090	.175	4′	8′	71	33
			*1½" .081	1.375x3.00	1.25 x2.625	.081x.112	.250	4′	8′	83	19
			*1½" .125	1.50 x3.00	1.25 x2.563	.125x.141	.250	4′	8′	81	34
			*4" .250	3.375x8.00	3.0 x6.75	.250x.356	.625	4′	8′ & 10′	82	76
		F	½" .051	.688x1.20	.550x1.00	.043x.100	.043	8′	4′	64	19
			*½" .081	.688x1.20	.580x1.00	.069x.100	.069	8′	4′	64	30
			*1½" .081	1.75 x3.00	1.375x2.625	.065x.160	.065	8′	4′	74	17
			*1½" .125	1.75 x3.00	1.375x2.563	.100x.190	.100	8′	4′	70	31
RONDO	Carbon Steel	R	½" #20	.520x1.195	.469x .938	.036x.089	.163	4′	8′	65	52
			½" #18	.520x1.195	.438x .938	.048x.089	.163	4′	8′	65	71
			*½" #16	.520x1.195	.438x .938	.060x.089	.163	4′	8′	65	86
		F	½" #20	.625x1.195	.500x .938	.030x.100	.030	8′	4′	59	47
			½" #18	.625x1.195	.438x .938	.040x.100	.040	8′	4′	59	64
			*½" #16	.625x1.195	.469x .938	.051x.100	.051	8′	4′	59	78
	Aluminum	R	½" .051	.520x1.195	.438x .933	.051x.089	.163	4′	8′	65	25
			*½" .081	.520x1.195	.408x .938	.081x.089	.163	4′	8′	65	40
		F	½" .051	.625x1.195	.500x .938	.043x.100	.043	8′	4′	59	23
			*½" .081	.625x1.195	.475x .938	.069x.100	.069	8′	4′	59	36
WAVELENGTH	Carbon Steel	R	*½" #20	.555x1.20	.468x .938	.036x.103	.171	4′	8′	63	55
			½" #18	.555x1.20	.438x .938	.048x.103	.171	4′	8′	63	74
			*½" #16	.555x1.20	.438x .938	.060x.103	.171	4′	8′	63	92
			*3/16" #26	.200x .500	.115x.420	.018x.050	.077	2′	4′	57	38
			*3/16" #24	.200x .500	.110x.400	.024x.050	.084	2′	4′	55	50
			*3/16" #22	.200x .500	.105x.380	.030x.050	.091	2′	4′	53	63
		F	*½" #20	.625x1.20	.500x .938	.030x.112	.030	8′	4′	57	50
			½" #18	.625x1.20	.375x .938	.040x.112	.040	8′	4′	57	67
			*½" #16	.625x1.20	.375x .938	.051x.112	.051	8′	4′	57	83
			*3/16" #26	.200x.522	.095x .430	.015x.050	.015	2′	4′	47	36
			*3/16" #24	.200x.523	.090x .420	.020x.055	.020	2′	4′	45	48
			*3/16" #22	.200x.525	.080x .410	.025x.060	.025	2′	4′	40	60
	Aluminum	R	*½" .051	.555x1.20	.438x .938	.050x.103	.171	4′	8′	63	27
			*½" .081	.555x1.20	.410x .938	.081x.103	.171	4′	8′	63	43
		F	½" .051	.625x1.20	.500x .938	.043x.112	.043	8′	4′	57	25
			*½" .051	.625x1.20	.475x .938	.068x.112	.068	8	4′	57	39

*Produced on special order. (H) = Heavy Strand (L) = Light Strand

Footnote 1—Sheet Sizes are 4′ x 8′, 6′ x 8′, and 6′ x 6′3″

TECHNICAL DATA—continued

Pattern	Material	Reg. Flat.	Style Designation	Design Size a x b (inches)		Opening Size (inches)		Strand Size c x d (inches)	Overall Thickness e (inches)	Standard Sheet Size		Per Cent Open Area	Wt.—lbs. Per 100 Sq. Ft.
										Width (SWO)	Length (LWO)		
MIN-X 	Carbon Steel	R	*3/16 #26 034 str	.188x.500		.150x.360		.018x.034	.064	2′	4′	80	27
			*3/16 #24 034 str	.188x.500		.140x.355		.024x.034	.067	2′	4′	75	36
			3/16 #22 034 str	.188x.500		.130x.350		.030x.034	.071	See Footnote 2		69	45
		F	*3/16" #26 034 str	.188x.520		.125x.400		.015x.040	.015	2′	4′	67	26
			*3/16" #24 034 str	.188x.522		.120x.390		.020x.035	.020	2′	4′	64	35
			3/16" #22 034 str	.188x.523		.120x.380		.025x.035	.025	See Footnote 2		64	43
	Aluminum	R	*3/16" .032 034 str	.188x.500		.140x.350		.032x.034	.068	2′	4	75	17
		F	*3/16" .032 034 str	.188x.525		.110x.360		.027x.040	.027	2′	4′	59	16
			MIN-X is produced in .050", .060", .070" and .080" strand widths on special order.										
CATHEDRAL 				SHORT	LONG	SHORT	LONG						
	Carbon Steel	R	1/2" #20	.458x1.0	.458x2.0	.344x.75	.344x1.75	.036x.089	.175	4′	8′	61	58
			1/2" #18	.458x1.0	.458x2.0	.344x.75	.344x1.75	.048x.089	.175	4′	8′	61	77
			1/2" #16	.458x1.0	.458x2.0	.344x.75	.344x1.75	.060x.089	.175	4′	8′	61	97
			1" #16	1.0x2.0	1.0x4.0	.750x1.5	.750x3.5	.0625x.200	.343	4′	8′	75	105
		F	1/2" #20	.534x1.0	.534x2.0	.344x.75	.344x1.75	.033x.092	.033	8′	4′	58	53
			1/2" #18	.540x1.0	.540x2.0	.344x.75	.344x1.75	.044x.092	.044	8′	4′	58	70
			1/2" #16	.562x1.0	.562x2.0	.344x.75	.344x1.75	.052x.092	.052	8′	4′	58	89
	Aluminum	R	1/2" .051	.458x1.0	.458x2.0	.344x.75	.344x1.75	.051x.089	.175	4′	8′	61	28
			1/2" .081	.458x1.0	.458x2.0	.344x.75	.344x1.75	.081x.089	.175	4′	8′	61	45
			1" .081	1.0x2.0	1.0x4.0	.750x1.5	.750x3.5	.081x.200	.343	4′	8′	75	46
		F	1/2" .051	.562x1.0	.562x2.0	.344x.75	.344x1.75	.046x.095	.046	8′	4′	58	26
			1/2" .081	.562x1.0	.562x2.0	.313x.75	.313x1.75	.068x.100	.068	8′	4′	58	41

*Produced on special order.

Footnote 2——Sheet Sizes are 2′x4′ and 3′x8′.

AVAILABLE METALS

CARBON STEEL units are formed from soft open hearth steel sheets.

Finishes—Carbon steel decorative expanded metal Type R and Type F is shipped unpainted and without special finishes. Decorative expanded metal will take most any type of coating. Nickel, chrome, copper, or vacuum plating; porcelain enameling; or a good paint job can be given to this material because it has a smooth surface and is readily adapted to high grade finishing. Both Type F and Type R decorative expanded metals can be rubber coated either by the anodic process or by dipping.

ALUMINUM units are formed from aluminum alloy type 3003-H14. While other alloy types may be adaptable to expanding, 3003-H14 was found to be best suited to the expanding operation, and was also chosen because of its wide utility, high corrosion resistance, adequate strength, and low cost. Units formed from this alloy can be either anodized or porcelain enameled.

Finish—Shipped unbuffed and unpolished.

ORDERING INFORMATION

Terminology

Type R. Regular decorative expanded metal

Type F. Cross-rolled Flattened expanded decorative metal

Sheet Sizes

Type R: 4′ Short Way Opening (SWO) x 8′ Long Way Opening (LWO)

Type F: 8′ Short Way Opening (SWO) x 4′ Long Way Opening (LWO) (See below)

Type F is shipped in untrimmed sheets unless otherwise specified. Customer will be charged for 8′ x 4′ area but will receive oversize sheets with up to 1″ camber. (Length of Type F untrimmed sheets; up to 4″ longer in 8′ dimensions.)

Where specifically requested, Type F may be furnished Random (Type "A") sheared to 8′ x 4′. (Random shearing usually leaves prongs along both 8′ sides of the sheet.)

TYPES OF SHEARING AVAILABLE

(Refer to shearing diagram page 7)

SIDE SHEARING—(Parallel to long dimension of opening.)

Random (Type "A") Shearing—Cut to width (SWO) specified, with tolerance of plus or minus 1/16″. This type of shearing will usually leave jagged edges. Note: 4″ ARMORWEAVE cannot be random sheared.

Bond (Type "AA") Shearing—Cut on center line of first bond over specified width. Tolerance, minus 0, plus 1/2 diamond.

Limitations: "AA" shearing cannot be furnished on Type F decorative expanded metal.

END SHEARING—(Parallel to short dimension of opening.)

Random (Type "A") Shearing—Cut to length (LWO) specified, with tolerance of plus or minus 1/16″. This type of shearing will usually leave prongs at both ends.

Bond (Type "AA") Shearing—Cut to length (LWO) specified, with tolerance of plus or minus 1/16″. One end to be cut on center line of bond. Available on Type R only.

SQUARENESS—Maximum "out of squareness" of all sheared material (when all four sides are sheared), shall not exceed 1/16″ per foot of length.

ARCHITECTURAL SPECIFICATION:

SCOPE: The Contractor shall supply all labor, material and equipment to install the specified pattern of USG Expanded Metal in all areas where shown on the drawings.

MATERIALS: Expanded Metal pattern used shall be (specify by complete style designation). (Example: 1½″ .081 USG Aluminum ARMORWEAVE Expanded Metal—Type "R".) The Contractor should be advised if finish on the Expanded Metal is required, i.e., anodized, etc.

SUNSHADING

Sunshading of glass areas has become increasingly important to architects because of its effect on air conditioning costs. Today's buildings are being designed with as much as three times the glass area of those in the 1920's. Tripling of the transparent area approximately doubles the cooling load on air conditioning equipment.

One of the ways of controlling and reducing air conditioning loads is with an exterior shading device which acts as a barrier to the heat of the sun's rays. Because of its wide strand ARMORWEAVE Decorative Expanded Metal is ideally suited for sunshading as a horizontal overhang, vertical screen or entire building facia.

Shading Characteristics Of Armorweave

In the summer, the sun is higher in the sky than it is in winter. A well-designed shading device will keep out the heat of the summer sun and yet not interrupt the welcome heat of the winter sun.

ARMORWEAVE provides protection from the summer sun's rays at peak conditions and throughout the cooling season. It also allows sunlight to pass, during the winter months.

The several styles of ARMORWEAVE available, give architects a choice of materials to meet various sunshading requirements. ½" and 1½" (L) ARMORWEAVE placed vertically give 100% shading at a 45° profile angle. For more critical sunshading requirements, 1½" (H) ARMORWEAVE—a heavier strand material created especially for use as a sunshade—gives 100% shading at a 36° profile angle.

The table below shows shading percentages of ARMORWEAVE placed vertically for various profile angles of the sun. The profile angle defines many positions of the sun (see definition below) and, therefore, has been chosen as a reference.

(The slope of the bond in the ARMORWEAVE is down and toward the sun, to provide maximum shading and these results.)

Shading

Percent Shading—Armorweave	Profile Angle—Degrees						
	0	10	20	30	36	40	45
½" and 1½" (L) Styles	63	71	79	87	—	96	100
1½" (H) Styles	73	81	88	95	100	100	100

(L)—Light Strands (H) Heavy Strands

PROFILE ANGLE—The angle through which a horizontal plane must be rotated about a horizontal axis located in the plane of the ARMORWEAVE *Expanded Metal in order to include the position of the sun. The profile angle, sometimes called the shadow angle, is used on sectional drawings to calculate the positions and dimensions of shading devices.*

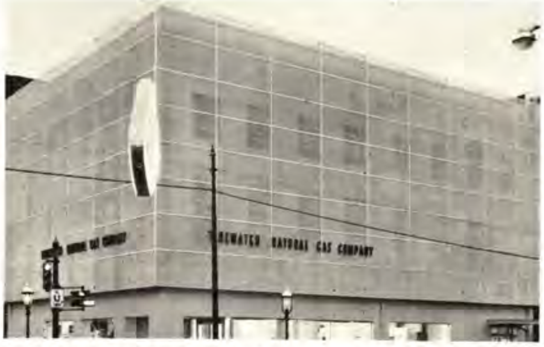
Advantages Of Armorweave As A Sunshade

ARMORWEAVE is an efficient and practical "sunshading" material. This versatile expanded metal shuts out unwanted glare—and heat—by shading the openings in wall areas, yet permits passage of needed light, as well as air. Screening out heat increases comfort indoors, substantially lowers air conditioning costs. While cutting down on the heat of the summer sun, it does not minimize the warmth of the winter sun.

ARMORWEAVE used as a sunshade gives nearly 180° of horizontal outlook and still affords desirable privacy from the stares of passersby to those inside the building.

Architects can create their own designs and effects with this expanded metal, as it can be adapted to most modules. It is right in line with the trend to decorative grillwork. Easily fabricated to standard lightweight steel or aluminum framing sections, ARMORWEAVE with ordinary proper attachments, is sufficiently strong to perform satisfactorily under the severest wind conditions.

BEFORE Remodeling



AFTER Remodeling with USG Armorweave Expanded Metal

ARMORWEAVE is all in one piece and has no moving parts to rely upon for effectiveness. It is relatively maintenance free when finished with porcelain enamel, anodized or plastic coatings for full weather protection.

A technical pamphlet entitled "ARMORWEAVE *for Sunshading" is available from U.S.G. Sales Offices should more information on this subject be required.*

WIND LOAD TESTS ON ARMORWEAVE

In August 1958, wind tunnel tests of ARMORWEAVE expanded metal panels were conducted by the University of Wichita, Department of Engineering Research, Wichita, Kansas. The tests were conducted on 4' x 4' panels of ½"—18 and 1½"—18 carbon steel ARMORWEAVE.

The results of these tests showed that, with ordinary proper attachments, 1½" –18 ARMORWEAVE when used on the exterior of buildings will perform satisfactorily under the most severe wind conditions. Furthermore, vibrations noticed during the tests were inconsequential and would not cause fatigue of the ARMORWEAVE nor a gross increase in the stress due to resonance.

Comparison With Flat Plate

The tests showed the normal load on 1½"—18 ARMORWEAVE is no greater than 55% of the normal load on a solid flat plate. The tests also indicated the normal load on ½"—18 ARMORWEAVE is equal to the 1½" style.

Because of the airfoil design of ARMORWEAVE, similar to an upside down airplane wing, a downward force results from a wind load condition. This downward force varies from 7.7 lb. per sq. ft. (of ARMORWEAVE) for a 71 mph. wind, to 20.0 lb. per sq. ft. for a 112 mph. wind.

The small numerical value of the side force makes it negligible.

For more specific information on the wind loading of ARMORWEAVE, contact the U.S.G. Sales Office and ask for the technical pamphlet entitled "Data and Application of the Wichita Wind Load Tests".

The background design is a full size projection of 4" ARMORWEAVE.

FINISHES

The increasing use of USG Expanded Metals in architecture, interior decoration and product design is due in part to its adaptability to metal finishing processes which add appropriate color and extra corrosion resistance to the native attractiveness of the meshes.

USG Expanded Metals are regularly produced by expanding sheets of aluminum alloy 3003 H-14 or mild open-hearth scale free, low carbon steel, or type 304 stainless steel. Most finishes, adaptable to these metals can be applied to their expanded form.

Anodized Finishes

Aluminum owes its corrosion resistance to a natural oxide coating which protects the metal. Alloy 3003 used in USG Aluminum Expanded Metal is one of the most corrosion resistant commercial alloys. However, since aluminum may weather on long exposure, and is subject to attack by certain combinations of sea air, high humidity and industrially contaminated atmospheres, protective surface treatments are often specified.

The most common surface treatments for aluminum are the anodizing processes in which an added oxide coating is formed electrochemically on the metal. This anodic coating is applied by finishers located throughout the country.

Anodic coatings usually decorate as well as protect. The coating is minutely porous when originally formed and may be colored by various dyes and pigments. Subsequent treatment closes the pores, and the color and coating become an integral part of the metal.

The cost and protection afforded by anodic coatings depends largely on their thickness. An .00025″ coating is recommended for interior use where minimum abrasion resistance is needed. An .0004″ coating is used for interior or maintained exterior applications under medium abrasion conditions. An .0008″ coating is recommended for exterior use and has high abrasion resistance.

Alloy 3003 takes anodic films with a permanence and color match within standard commercial limits. However, variations in the alloy and the anodizer's process will effect both permanence and color match.

The Aluminum Company of America has developed a carefully controlled anodizing process, Alcoa—Architectural Color Finish, specifically for unmaintained exterior aluminum. Where all phases of the recommended procedure are followed, this finishing process is designed to give increased weather resistance, a high degree of color permanency and excellent color match.

Alcoa Architectural Color Finishes may be applied only to "Anoclad" or equivalent sheets. These sheets are rolled with a thin clad surface very carefully controlled and tested as to alloying constituents and impurities. The composition of this surface cladding is varied to achieve particular effects. Expanding exposes an edge of base alloy where the clad sheet is cut in the expanding operation. *This may* produce a slight two-tone effect after finishing, which we believe is attractive.

Porcelain Enamel Finishes

Porcelain enamel offers the architect or designer an unlimited variety of colors obtainable with mineral oxides. The colors are permanent and will not fade, peel or deteriorate with age. Building exteriors have long been finished in porcelain enamel because it will successfully withstand severe weather conditions of all kinds.

Porcelain enamel is unaffected by common acid or alcohol found in the home. The glass-like surface of porcelain enamel means it is easily cleaned; resistant to severe abrasion and fire resistant.

Porcelain enamel finishes have a tendency to flake or spall off when they are hit with a hammer or receive a sharp impact. All fabrication such as cutting, drilling, welding or forming of expanded metal panels should be completed before porcelain enameling.

Porcelain enamel finishes can be applied to standard stock sheets of USG Expanded Metal by enamelers located throughout the country. The steel and aluminum alloys used in making USG Expanded Metal have been found by trial to be compatible to porcelain enameling. Contrary to common belief, the porcelain enamel can be applied to completely coat the strands and bonds of the expanded metal, including the sharp corners.

Painting, Plating, Enameling And Plastic Finishes

All USG Expanded Metals are produced from scale-free metal and thus do not present special problems to finishers. Painting is best accomplished with spray or deep nap roller, since the edges and corners of the mesh may be injurious to brushes. The meshes readily adapt to standard methods of applying hot-dip galvanize, electro-plate, and baked enamel finishes. Plastic finishes have been applied successfully by dipping, spraying and surface cladding prior to sheet expansion.

Cleaning

Provision should always be made to clean USG Expanded Metal prior to finishing; and most finishers include this as a standard procedure. The carbon steel styles are shipped lightly oiled by us. A solvent or acid dip followed by water rinsing is a common cleaning method. For smaller projects the expanded metal may be wiped clean with a solvent.

The aluminum styles may also have oily surface deposits picked up during rolling of the sheets by the aluminum producer or from our expanding machines. Because of possible dust accumulation, it is recommended to clean aluminum meshes which are to be erected without additional finishing. Washing with a mild soap, detergent or non-etching chemical cleaner followed by thorough rinsing and drying, or the use of wax base and non-wax base polish cleaners, are two methods recommended by aluminum producers.

FINISHES aluminum

ALLOY	TYPE	EXTERIOR	INTERIOR	REMARKS
3003H-14	Unfinished	X	X	Specify surface cleaning prior to erection.
3003H-14	Painted	X	X	Specify surface cleaning prior to painting.
3003H-14	Interior Anodized		X	Resists mild abrasion. Colors generally available natural, red, blue, green, yellow, gold, silver, copper, brass and black.
3003H-14	Exterior Anodized	X	X	Higher abrasion resistance.
3003H-14	Heavy Duty Anodized	X	X	Highest abrasion resistance and resistance to attack by combinations of sea air, humidity and industrially contaminated atmospheres.
3003H-14	Porcelain Enameled	X	X	
6061-0	Porcelain Enameled	X	X	Better structural properties after firing. This alloy expanded on special order only.
	carbon steel			
	Painted	X	X	Steel used has scale-free surface, but is shipped lightly oiled. Specify cleaning prior to finishing.
	Bonderized & Enameled	X	X	
	Galvanized	X	X	
	Plastic Coated	X	X	
	Porcelain Enameled	X	X	Produced from low carbon open hearth steel adaptable to this finish.

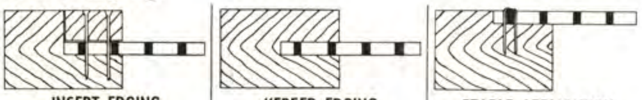
The finishes are generally arranged in ascending order of added initial cost. United States Gypsum does not apply these finishes at our expanded metal plant.

EDGINGS FOR EXPANDED METAL

For more effective design and fabrication of products using Expanded Metals, the selection of the proper edging is highly important. Since USG Expanded Metals are readily adapted to various edging materials, the designers choice of edging will usually be governed by the end use of the expanded metal assembly. Shown below is data on various edging materials and how to use them to provide greater flexibility of design, utility, economy and complete safety with USG Expanded Metals.

RIGID

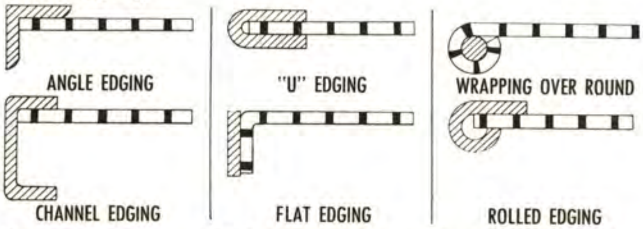
Wood Edging



INSERT EDGING | KERFED EDGING | STAPLE APPLICATION

Softwoods are suitable for general utility edgings, however, greater permanence, wearability and beauty are obtained with hardwood edgings. Cost, availability and end use will affect the type of wood used.

Steel Edging

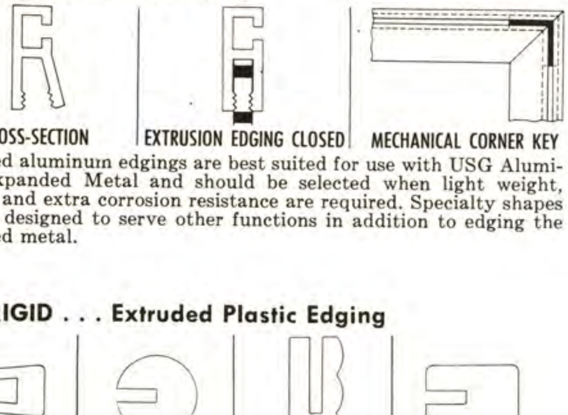


ANGLE EDGING | "U" EDGING | WRAPPING OVER ROUND

CHANNEL EDGING | FLAT EDGING | ROLLED EDGING

Steel edgings are popular for their high strength and ease of fabrication. Hot rolled angles, rounds, bars or channels and cold rolled U-edging or other specialty sections are also suitable for edging expanded metal.

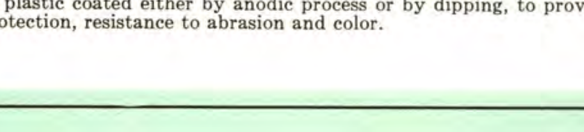
Extruded Aluminum Edging



CROSS-SECTION | EXTRUSION EDGING CLOSED | MECHANICAL CORNER KEY

Extruded aluminum edgings are best suited for use with USG Aluminum Expanded Metal and should be selected when light weight, beauty, and extra corrosion resistance are required. Specialty shapes may be designed to serve other functions in addition to edging the expanded metal.

SEMI-RIGID . . . Extruded Plastic Edging



Various types of plastics can be used for extruded plastic edgings where light weight and color are needed and strength is not too important.

FLEXIBLE . . . Liquid Plastic Edging

The edges or the full sheet of USG Expanded Metal can be rubber or plastic coated either by anodic process or by dipping, to provide protection, resistance to abrasion and color.

FUNCTION AND UTILITY

RIGID Edgings are used where structural functions are required of the edging material. Secure attachment of the expanded metal to the edging is possible for greater rigidity of the sheet.

Wood Edgings are easily fabricated with standard hand or woodworking tools. Woods suitable for edgings or specially shaped moldings are available from lumber yards or manufacturers of wood moldings. The corners of frames may be either butted or mitered. The latter joint is best for kerfed and insert edgings. Corner joints are fastened by using an adhesive with reinforcing such as nailing, slip feathering, splining or doweling.

The *insert edging* is used where complete covering of the edge is required and only one finished side is needed. Finishing nails or staples are used to fasten the insert.

The *kerfed edging* presents a neat finished appearance in which either side can be used. The kerf holds the expanded metal in place.

The *staple* method of attaching USG Expanded Metal is the fastest and most economical way to apply a wood edging.

Steel Edgings are readily fabricated with standard metal working and welding equipment. They are available from steel supply warehouses or specialty steel fabricators. Hot rolled shapes are generally suitable for edging. Corners may be bent on rounds, squares and flats used on end, but angles, channels and U-Edging are best joined by coping and mitering. Mitered corner and end joints are usually arc welded but other methods of welding may be used. Excess welding materials should be removed to provide clean smooth joints.

Spotwelding the expanded metal to the edging is one of the fastest and simplest methods used. Arc welding can be done if care is taken not to burn the expanded metal.

Extruded Aluminum Edgings can be fabricated with standard metal cutting or woodworking machinery. They can be painted or anodized to match the expanded metal. Aluminum supply houses stock a wide variety of standard shapes, or special shapes may be obtained from a manufacturer of aluminum extrusions.

Corners are best formed by mitering and welding, brazing or fitting with a mechanical key. The edgings are formed into frames in the same manner as steel edging. Welding the corners and joints improves the strength of the frame but mechanical keys may be used.

In applying the expanded metal to the edging frame, a welded construction is strongest, but mechanical fastening by crimping the edging or fastening with rivets or screws may offer some economies.

SEMI-RIGID Edgings are used where stiffeners and rigidity are required of the edging material and strength is of limited importance.

Extruded Plastic Edgings can be readily fabricated with wood and metal working tools. They may be bent at a low heat, laminated with adhesives and have resistance to abrasions and bending. They can be finished with paint, lacquer or enamel or are available in a wide range of colors. Many shapes are available from plastic extruding companies which make suitable edging shapes, or dies can be developed to make special shapes.

Plastic extrusions are formed by heating, to approximately 180° F. and forming by hand or with male and female dies. They may be cut with band, circular or hand saws and laminated to themselves or other materials with adhesives.

FLEXIBLE Edgings are used as a decorative or protective edging generally on small pieces where strength is obtained through the expanded metal itself. The development and application of plastic edgings and coatings to USG Expanded Metals opens the door to many new uses for this versatile product.

FASTENING & FRAMING DETAILS

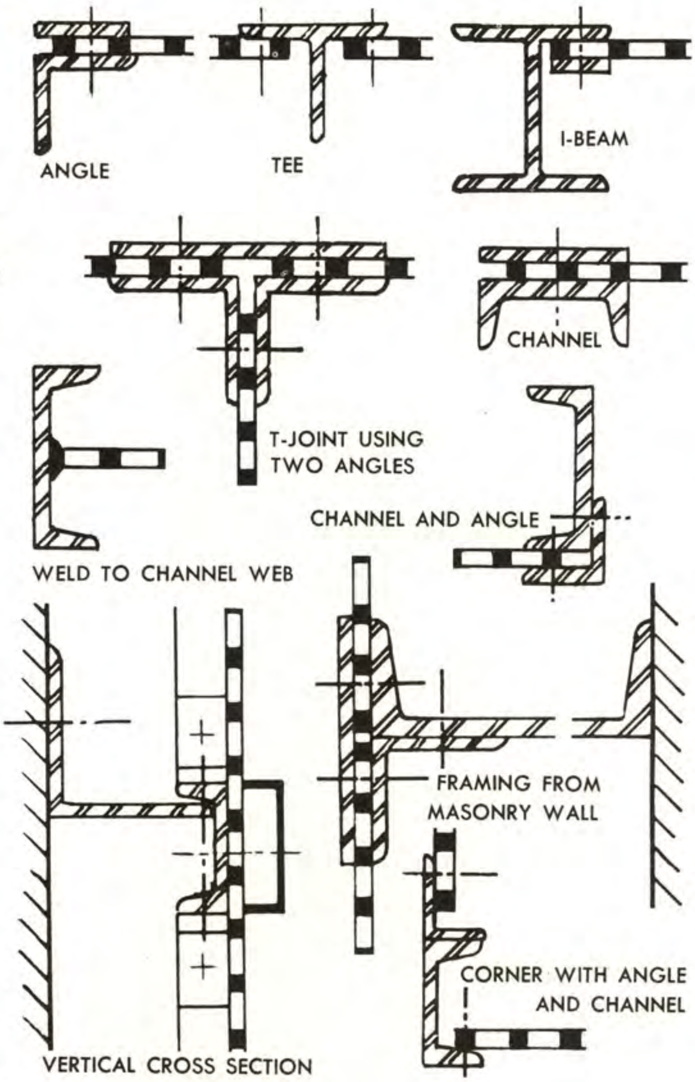
The architectural applications for USG Expanded Metals have increased rapidly since the introduction of USG Decorative Expanded Metal. Produced in both aluminum and steel, these decorative meshes provide a beautiful, functional, and economical material to serve architecturally for exterior sunshades, ornamental grilles, railing guards, space dividers and many other applications.

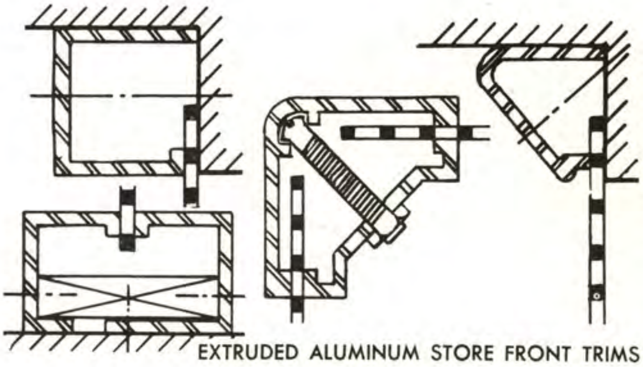
Though USG Expanded Metal is a unique and modern material, it adapts readily to framing sections and fastenings which are common in architectural use. Shown below are a series of typical details for use as a guide to the architect and fabricator.

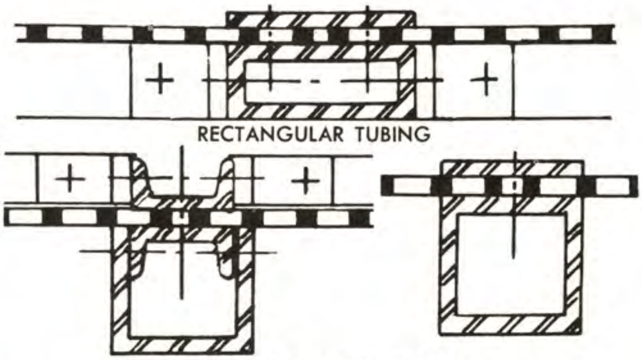
Many hot rolled and cold formed aluminum and steel sections may be used. Examples are shown of typical framings incorporating angles, bars, tees, channels and I-beams. Aluminum extrusions, such as rectangular and square tubing and various types of metal store-front trim, have also found their place as expanded metal framing materials. Shown also are suggestions for grid framing systems for constructing a new facade on an older building. Wood framing methods are shown on Page 14.

Fastening USG Expanded Metals to the supporting framework may be accomplished with self-tapping or sheet metal screws, fastening directly through the strand or opening in the expanded metal. Pull-through type or self-plugging type blind rivets or drive rivets may also be used. Welding at points where the expanded metal is adjacent to framing is also satisfactory.

The services of U.S.G. Sales Engineers and Architect Service Representatives are available to give you further information on specific applications. See Page 16 for a listing of U.S.G. Sales Offices.



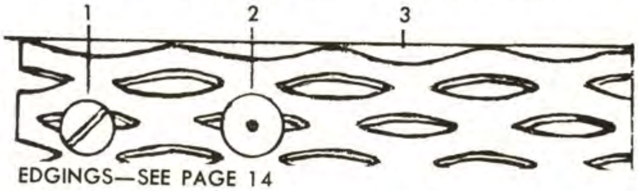

EXTRUDED ALUMINUM STORE FRONT TRIMS



HORIZONTAL CROSS SECTION

Fastening with screws, rivets, or welding

1. Self tapping or sheet metal screws.
2. Pull-through or self plugging type blind rivet or drive rivets.
3. Weld where expanded metal is adjacent to frame.



EDGINGS—SEE PAGE 14

GRATE-X*
EXPANDED METAL GRATING

For more information on GRATE-X
see our catalog in Sweet's
Industrial Const. File . . 12c/Un
or see the AIA File 14-A-1

GRATE-X is a heavy duty type expanded metal, made of steel plate which is slit and expanded in a cold-drawing operation.

Designed especially for use as light weight open steel flooring. GRATE-X is ideal for flooring, cat walks, platforms, stair treads, etc., where its principal use is for light storage and foot traffic. Many other practical uses are possible.

Economical—A wide selection of sizes and weights is available and its light weight, consistent with high strength makes for a most economical construction.

Extra Safety—The angular ridged surface formed by the multiple junctions of strands provides excellent antislip qualities. The closely-spaced long bond feature of GRATE-X provides greater contact area, resulting in a high traction surface, highly skid-proof yet smooth enough for wheel traffic. Water and oil drain off readily.

PROJECTION MESH is produced with small toothlike projections on the upper surface for maximum anti-skid qualities.

Large Open Area—The angular position of the strands and bonds permits free passage of light and air. Dust cannot accumulate.

GRATE-X TECHNICAL DATA

CARBON STEEL

Style (psf)	Diamond Size Width x Length	Opening Size Width x Length	Strand Size Width x Thickness	Sheet Size Width (SWD) x Length (LWD)
3.0 lb.	1.44" x5.0"	1.09" x3.31"	.23" x.223"	48"x96"** 72"x60", 96"** or 120"
3.14 lb.	2.00" x6.0"	1.625"x4.875"	.312"x.250"	48" or 72"x120"
4.0 lb.	1.395"x5.0"	1.02" x3.25"	.30" x.223"	48", 60" or 72"x96"** 60"x60" or 120"
4.27 lb.	1.412"x4.0"	1.0" x2.88"	.30" x.250"	48" or 72"x96"
5.0 lb.	1.143"x5.0"	.72" x2.88"	.31" x.223"	48"x60", 96"** or 120"
6.25 lb.	1.412"x5.0"	.781"x3.125"	.38" x.284"	48" or 72"x96"**
7.0 lb.	1.333"x5.0"	.70" x2.75"	.40" x.284"	48"x50" or 100"

**Length shown is nominal, actual length is 97½".

ALUMINUM

2.0 lb.	1.25" x5.0"	.73" x2.88"	.356"x2.50"	60"x60" or 120"

PROJECTION MESH

1.87 lb.	1.125"x5.000"	.875"x3.188"	.187"x.134"	72"x120"

GRATE-X SELECTION GUIDE

Concentrated Load (Lbs. Per Foot of Width-SWD)	SPAN					
	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-6"
50# Occasional pedestrian loads (window washers, inspectors, etc.)	3#	3#	4#	5#	7#	7#
100# Normal pedestrian traffic	3#	4#	5#	7#	7#	
150# Heavy pedestrian traffic or workmen with light equipment	4#	5#	7#	7#		
200#	5#	7#	7#			
250#	7#	7#				

Aluminum Grate-X is also available in a 2 lb. per square foot weight made from ¼ in. sheet stock.

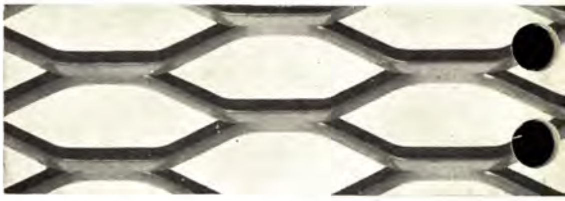
Special Sheet Sizes—In addition to furnishing the standard size sheets listed in the table above, GRATE-X can be furnished sheared to special sizes. Note: It is standard practice to shear GRATE-X on the first bond over the dimension specified, both SWD (Short Way of Diamond) and LWD (Long Way of Diamond).

Prefabricated Grate-X Treads—GRATE-X stair treads have all the advantages of GRATE-X and are ideal for fire escapes and all types of industrial and ship stairways. The treads are completely prefabricated by U. S. G. and shipped to the customer ready for installation. The stair treads are easily installed by a simple attachment with bolts and nuts to standard steel channel stringers. Bolts and nuts for attachment are not furnished with the treads.

Tread lengths are available from 16 in. to 48 in. inclusive, in ½ in. increments. Standard widths are listed in table below.

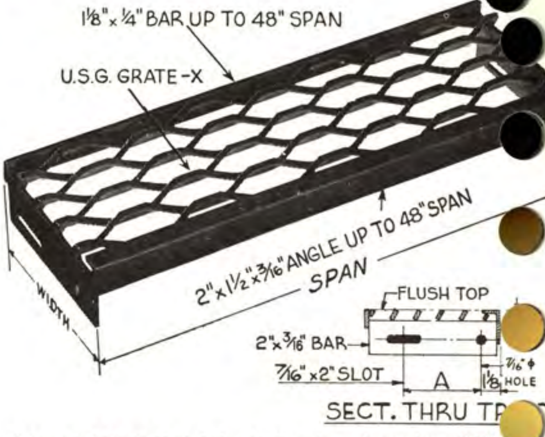
No. 4-A Tread (Made from 4-lb. GRATE-X)	No. 5-A Tread (Made from 5-lb. GRATE-X)	Dimension "A" (See drawing)
5¾"	6¼"	2½"
7⅛"	7⅜"	2½"
8½"	8½"	4½"
9⅞"	9¾"	6"
11¼"	10⅞"	7"

For complete information on GRATE-X and GRATE-X stair treads, ask for our GRATE-X catalog.



4 lb. GRATE-X approximately ⅓ actual size.

GRATE-X permits maximum passage of air and light.



(above) GRATE-X stair tread showing dimensions "A".

*T.M. Reg. U.S. Pat. Off.

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A.I.A. File 14-A-I

TECHNICAL INFORMATION

GRATE-X*

EXPANDED METAL GRATING

UNITED STATES GYPSUM

1963

*T.M. Reg. U.S. Pat. Off.

A.I.A File 14-A-I

GRATE-X*
EXPANDED METAL GRATING

Description

GRATE-X is a heavy duty type expanded metal, made of steel plate which is slit and expanded in a cold-drawing operation. Designed especially for use as a lightweight open steel flooring. GRATE-X is ideal for flooring, cat walks, platforms, stair treads, etc., where its principal use is for light storage and foot traffic. Many other practical uses are possible.

U.S.G. Grate-X is also made from ¼″ aluminum plate for uses where the inherent properties of aluminum are required in addition to the advantages of Grate-X.

Function and Utility

Economical: Its low cost and light weight, combined with high strength, make for a most economical construction. A wide selection of sizes and weights is available.

High Strength: Formed like a truss, every interconnected strand acts as a structural member distributing the load in many directions, over a considerable area. There are no riveted or welded joints.

Easily Installed: The uniform pattern; ease of cutting with torch, bolt cutters or hacksaw; ease of anchorage with spot welding or bolting and ease of shaping to curved surfaces make for quick, easy installation. Holes may be cut or patched, and alterations made at will. Ease of fabrication permits stocking at user's plant for use as needed for alterations, additions, etc.

Extra Safety: The angular ridged surface formed by the multiple junctions of strands provides excellent anti-slip qualities. The closely-spaced long bond feature of GRATE-X provides greater contact area, resulting in a high traction surface, highly skid-proof yet smooth enough for wheel traffic. Snow and ice break off easily under foot, water and oil drain off readily; thus maintaining anti-slip qualities under adverse conditions.

Large Open Area: The angular position of the strands and bonds permits ready passage of light and air. Dust cannot accumulate. The percentage of open area is actually as great at an entrance angle of 45 degrees as at 90 degrees.

Easily Maintained: The angular position of strands and bonds and large open area make GRATE-X virtually self-cleaning. All surfaces can be readily reached for painting with brush or spray gun.

For further details, consult the nearest USG sales office.

GRATE-X allows ready passage of air and light

Specifications

SCOPE: GRATE-X (U. S. G. Expanded Metal Grating), shall be installed for all walkways and other areas where shown on drawings.

Material: GRATE-X shall weigh (specify weight per square foot from Table 2).

(For steel) The steel used in its manufacture shall comply with ASTM designation A-283-58T.

(For aluminum) The aluminum in its manufacture shall be 5052 H-32 alloy of aluminum.

ERECTION: Units of GRATE-X shall be installed with straight edge of bond up. GRATE-X shall be so placed that the direction of the long way of the diamond parallels the direction of the span. Attachment to framing shall be by welding at 6″ intervals. Edges parallel to long way of diamonds shall be butted and welded on every second bond. Individual pieces of GRATE-X shall be placed in such a manner that the diamonds of one piece are aligned with those of adjacent pieces.

"GRATE-X" and "EXPAND-X" are registered trademarks owned by United States Gypsum and identify the particular types of expanded metal manufactured only by United States Gypsum

GRATE-X* STAIR TREADS

GRATE-X stair treads have all the advantages of GRATE-X and are ideal for fire escapes and all types of industrial and ship stairways. The treads are completely prefabricated by U.S.G. and shipped to the customer ready for installation. The stair treads are easily installed by a simple attachment with bolts and nuts to standard steel channel stringers. Bolts and nuts for attachment are not furnished with the treads.

Tread lengths are available from 16 in. to 48 in. inclusive, in ½ in. increments. Standard widths are listed in table on page 3.

*T.M. Reg. U. S. Pat. Off.

GRATE-X
EXPANDED METAL GRATING

TECHNICAL DATA Load Test Data with Deflections in Inches

Table 1

LOADING CONDITION—Concentrated load in lbs. per 12″ of width applied at center of span. Deflections given in inches at center of span are based on tests. Ends of grating rigidly fastened about 6″ on centers.

Carbon Steel (3, 4, 5 and 7 lb.) Grate-X. Data from tests by Armour Research Foundation: 6.25 lb. Data from USG Research.

LOAD	DEFLECTION IN INCHES . . . CARBON STEEL GRATE-X																		
CONCENTRATED LOAD AT CENTER LINE — POUNDS PER 12″ WIDTHS	25″ CLEAR SPAN TYPE OF GRATING					30″ CLEAR SPAN TYPE OF GRATING					35″ CLEAR SPAN TYPE OF GRATING					40″ CLEAR SPAN TYPE OF GRATING			
	3.0 lb.	4.0 lb.	5.0 lb.	6.25 lb.	7.0 lb.	3.0 lb.	4.0 lb.	5.0 lb.	6.25 lb.	7.0 lb.	3.0 lb.	4.0 lb.	5.0 lb.	6.25 lb.	7.0 lb.	4.0 lb.	5.0 lb.	6.25 lb.	7.0 lb.
50	.060	.040	.037	.020	.011	.086	.061	.048	.030	.031	.147	.088	.068	.043	.051	.119	.089	.055	.062
100	.114	.082	.070	.035	.035	.169	.120	.093	.058	.062		.174	.138	.082	.089	.241	.177	.107	.111
150		.119	.102	.054	.062		.177	.140	.083	.093			.204	.120	.123		.260	.157	.159
200			.134	.072	.079			.181	.120	.117				.157	.155			.212	.205

Carbon Steel (3.14 and 4.27 lb.) and Aluminum (2.0 lb.) Grate-X. Data from USG Research.

LOAD	DEFLECTION IN INCHES CARBON STEEL (3.14 AND 4.27 lb.) GRATE-X								DEFLECTION IN INCHES ALUMINUM (2.0 lb.) GRATE-X	
CONCENTRATED LOAD AT CENTER LINE — POUNDS PER 12″ WIDTHS	23″ CLEAR SPAN TYPE OF GRATING		29″ CLEAR SPAN TYPE OF GRATING		35″ CLEAR SPAN TYPE OF GRATING		41″ CLEAR SPAN TYPE OF GRATING		CLEAR SPAN	
	3.14 lb.	4.27 lb.	3.14 lb.	4.27 lb.	3.14 lb.	4.27 lb.	3.14 lb.	4.27 lb.	20″	25″
50	.037	.024	.057	.043	.086	.083	.097	.123	.076	.118
100	.070	.050	.112	.095	.174	.156	.192	.232	.153	.237
150	.105	.080		.153		.223			.229	.355
200		.111		.209					.306	

Weights (per square foot) and Dimensions (inches)

Table 2

CARBON STEEL

STYLE (psf)	DIAMOND SIZE WIDTH X LENGTH	OPENING SIZE	STRAND WIDTH	STRAND THICK-NESS	GRATE-X DEPTH	PERCENT OPEN AREA	SHEET SIZE WIDTH (SWD) LENGTH (LWD)
3.0 lb.	1.44 x 5.0	1.09 x 3.31	.23	.223	½	61%	48″ x 96″ γ 72″ x 60″, 96″ γ or 120″
3.14 lb.	2.000 x 6.0	1.625 x 4.875	.312	.250	9/16	69%	48″ or 72″ x 120″
4.0 lb.	1.395 x 5.0	1.02 x 3.25	.30	.223	⅝	54%	48″, 60″ or 72″ x 96″ γ 60″ x 60″ or 120″
4.27 lb.	1.412 x 4.0	1.0 x 2.88	.30	.250	⅝	58%	48″ or 72″ x 96″
5.0 lb.	1.143 x 5.0	.72 x 2.88	.31	.223	⅝	48%	48″ x 60″, 96″γ or 120″
6.25 lb.	1.412 x 5.0	.781 x 3.125	.380	.284	47/64	46%	48″ or 72″ x 96″ γ
7.0 lb.	1.333 x 5.0	.70 x 2.75	.40	.284	¾	40%	48″ x 50″ x 100″

γ—Length shown is nominal, actual length—97½″.

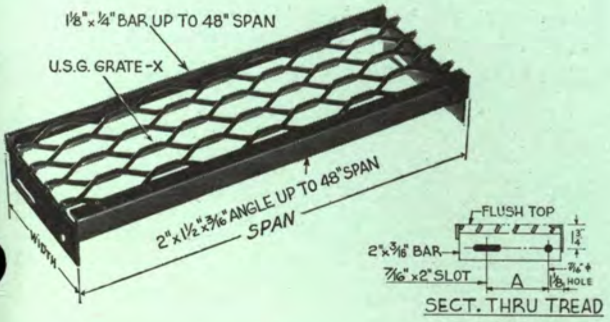
ALUMINUM

2.0 lb.	1.25 x 5.0	.73 x 2.88	.356	.250	⅝	43%	60″ x 60″ or 120″

Note: Special sizes on request. Specify sizes by giving diamonds SWD (Short way of diamond) by LWD (Long way of diamond) respectively.

#2 PROJECTION MESH

1.87 lb.	1.125 x 5.000	.88 x 3.19	.187	.134	11/16	67%	6′ x 10′



Widths Available

NO. 4A TREAD (4 LB. GRATE-X)	NO. 5A TREAD (5 LB. GRATE-X)	DIMENSION "A" FOR BOTH 4A & 5A
5¾″	6¼″	2½″
7⅛″	7⅜″	2½″
8½″	8½″	4½″
9⅞″	9¾″	6″
11¼″	10⅞″	7″

Lengths Available. Tread lengths from 16 inches to 48 inches inclusive, in ½ inch increments.

EXPAND-X*

EXPANDED METALS

For more information on EXPAND-X see our catalog in Sweet's
Architectural File...... 6e/Uni
Product Design File...... 1g/Uni
or see the AIA File 15-T, 30-J

Description

EXPAND-X and Flattened EXPAND-X are open mesh Expanded Metal units made from sheets of steel or certain other metals which have been slit and expanded in a single cold-drawn operation. See data below for sizes. In addition to our Standard EXPAND-X series, inquiries are invited on our Decorative Expanded Metal series.

Function and Utility

Many uses. Particularly suitable for partitions, ventilator grills, window guards, shelving, radiator enclosures, bins, racks, etc.

Open mesh. The large percentage of open area permits passage of air and light.

Strong and rigid. There are no rivets or welded joints except where units are joined. Strands of expanded metal are set at a sharp angle, improving strength and rigidity. Various weights are available to meet varying conditions.

Smooth surface. The surface of Flattened EXPAND-X expanded metal permits its use for shelving on which objects can more easily stand without tipping and slide without catching.

Workable. These products can be readily cut into desired shapes without danger of raveled strands, and may be welded, bent and formed, drawn and flared.

Neat appearance. Pattern is well formed and regularly spaced.

Accessories. Edgings, framings and various other accessories are available.

Metals. Open hearth steel, stainless steel and aluminum are stocked. Copper, brass, etc., can be furnished made to order.

Design service. United States Gypsum Industrial Sales Department is equipped to assist in working out specific problems and to recommend attachment devices and methods.

EXPAND-X

Flattened EXPAND-X

*T. M. Reg. U.S. Pat. Off.

Guide to the Selection of USG Expanded Metals

(All dimensions are approximate)

SUGGESTED APPLICATIONS									Style Number	EXPAND-X Weight per sq. ft. (lbs.)	EXPAND-X SIZE OF DIAMOND INCHES Cen. to Cen. of Bonds		EXPAND-X			Flattened EXPAND-X			Made from U.S. gaug No
EXPAND-X					Flattened EXPAND-X								Ap-prox. % open area	Sheet sizes		Ap-prox. % open area	Sheet sizes		
Machine guards	Window guards	Partitions	Non-skid surfaces	Baskets	Baskets	Trays racks and shelving	Machine guards	Partitions			Width	Length		Width short way of diamond	Length long way of diamond		Width short way of diamond	Length long way of diamond	
				•	•	•			¼″ #20	.94	.26	1.03	40	4′	8′	34	4′	8′	20
				•	•	•	•		¼″ #18	1.17	.26	1.03	40	4′	8′	34	3′ & 4′	8′	18
					•	•			½″ #40	.40	.497	1.195	83	4′	8′	75	3′ & 4′	8′	18
•					•	•			½″ #20	.43	.459	1.120	71	4′	8′	64	3′ & 4′	8′	20
•						•	•		½″ #18	.70	.507	1.195	65	4′ & 6′	8′ & 10′	58	3′ & 4′	8′ & 10′	18
•				•	•	•			½″ #16	.87	.507	1.195	65	4′ & 6′	8′ & 10′	60	3′ & 4′	8′ & 10′	16
	•		•	•	•	•			½″ #13	1.46	.503	1.2	61	4′ & 6½′	8′	52	3′ & 4′	8′	13
•				•	•	•			¾″ #16	.54	.880	2.00	76	4′ & 6′	8′ & 10′	74	3′ & 4′	8′ & 10′	16
•	•					•	•		¾″ #13	.80	.880	2.00	76	4′ & 6′	8′ & 10′	73	3′ & 4′	8′ & 10′	13
	•	•	•	•	•	•		•	¾″ # 9	1.80	.857	2.00	68	4′ & 6′	8′ & 10′	62	3′ & 4′	8′ & 10′	10
		•				•		•	1″ #16	.47	1.01	2.375	82	4′	8′	78	3′ & 4′	8′	16
					•	•		•	1½″ #16	.40	1.35	3.125	85	4′	8′	85	3′ & 4′	8′	16
		•				•		•	1½″ #13	.60	1.35	3.125	85	4′, 5′ & 6′	8′ & 10′	80	3′ & 4′	8′ & 10′	13
	•	•		•	•	•		•	1½″ # 9	1.19	1.33	3.125	76	4′ & 6′	8′ & 10′	74	3′ & 4′	8′ & 10′	10

Other types and styles also available

UNITED STATES GYPSUM—The Greatest Name in Building

GENERAL OFFICES • 300 WEST ADAMS STREET • CHICAGO 6, ILLINOIS

U. S. G. SALES OFFICES LOCATED AT THESE CITIES

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BOSTON, MASS.
  (WALTHAM)
CHARLOTTE, N.C.
CHICAGO, ILL.
CINCINNATI, OHIO
CLEVELAND, OHIO
  (CLEVELAND HEIGHTS)
DALLAS, TEXAS
DENVER, COLO.
DETROIT, MICH.
  (SOUTHFIELD)
GRAND RAPIDS, MICH.
HARRISBURG, PA.
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MINNEAPOLIS, MINN.
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  (CLIFTON)
NEW HAVEN, CONN.
  (HAMDEN)
NEW ORLEANS, LA.
NEW YORK, N.Y.
  (NEW YORK CITY)
  (SCARSDALE)
OKLAHOMA CITY, OKLA.
OMAHA, NEBR.
PEORIA, ILL.
PHILADELPHIA, PA.
  (BRYN MAWR)
PHOENIX, ARIZ.
PITTSBURGH, PA.
PORTLAND, ORE.
PROVIDENCE, R.I.
  (WARWICK)
RALEIGH, N.C.
RICHMOND, VA.
SACRAMENTO, CALIF.
ST. LOUIS, MO.
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SAN ANTONIO, TEXAS
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SAN FRANCISCO, CALIF.
OAKLAND, CALIF.
  (SAN LEANDRO)
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SYRACUSE, N.Y.
  (DE WITT)
WASHINGTON, D.C.
  (ARLINGTON)

STOCKS AVAILABLE
FROM WAREHOUSES
IN PRINCIPAL CITIES

A.I.A. File 25B

TECHNICAL INFORMATION

TEXOLITE*
PAINT PRODUCTS

UNITED STATES GYPSUM

1962

*T.M. Reg. U.S. Pat. Off.

UNITED
STATES
GYPSUM

A.I.A File 25B

TEXOLITE*
PAINT PRODUCTS

USG* PRODUCTS	Types	Characteristics	See Page	EXTERIOR USE		
				Porous Masonry Walls & Soffits	Above Grade Masonry	Wood & Asbestos Shakes & Shingles
Surface Preparations and Joint Treatment Products						
Sheetrock* Sealer		For use under enamels, other interior spirit-thinned and water-thinned emulsion paints	5			
Texolite Primer-Sealer		Quick drying, "locks in" lime or alkali, outstanding performance under water thinned paints. Also under interior oil paints.	5			
Texolite Exterior House Primer		Blister-resistant, breather type oil house primer	5			X
Texolite Penetrating Sealer		Specially formulated for porous or chalky surfaces.	5	X	X	
Texolite Block Filler		Conceals voids, fills pores & will correct or improve surface blemishes.	5	X	X	
Texolite Drywall Surfacer		Aggregated coating for sand-finish effect.	6			
Dura-Stop*		Forms durable, water-tight fill; resists hydrostatic pressure.	5	X	X	
Perf-A-Tape* Joint System		Reinforces, conceals gypsum wallboard joints, nailheads.	6			
Perf-A-Tape Joint Compound and Topping		" " " " " "	6			
Ready-mixed Perf-A-Tape Joint Compound		" " " " " "	6			
Red Top* Patching Plaster		For easy, permanent, low-cost patching or repair.	6			
Texolite Spackling Putty		General purpose fine filling, patching, building up.	6			
Texolite Paste Spackling Putty		All-purpose putty for patching, leveling most interior surfaces.	6			
Finishes	**Types**					
Texolite Alkyd Latex	flat	Quick drying, recoatable, no painty odor.	6			
Texolite* Grand Prize*	velvet	Quick drying, washable, excellent covering.	7			
Texolite Standard	flat	Cleanable water-thinned casein for interiors.	7			
texolite Latex House Paint	flat	Breather-type; alkali, weather, fade and chalk-resistant	7	X	X	X
Texolite Vinyl Exterior	flat	Good weathering, non-penetrating emulsified polyvinyl base.	6	X		X
Texolite Dura-Dri*	flat	Heavy bodied water protective coating.	7	X	X	
Texolite Cementico*	flat	Water repellent hydraulic cement base.	7	X	X	
Texolite Floor Paint	medium gloss	Quick drying, recoatable latex floor paint for interior and exterior use.	7			
USG* Simulated Acoustical Spray Finish	textured	Provides acoustical appearance	6			
Texolite Semi-Gloss Enamel	semi-gloss	Spirit-thinned, odorless alkyd base enamel.	8			
Texolite Oil Paints	various	Solvent thinned oil paints	8	X	X	X
Super Neo-Fleck® multi-color enamel	flat	Tough, thick-filmed multicolored interior enamel.	7			
Texolite Texture	sanded	Odorless, one-coat, rubberized.	8			
Texolite Ripple	stipple	Latex base, ready to use interior finish.	8			
USG Spray Texture	texture	Excellent hardness, good under-surface concealment	8			
Textone*	textured	Plastic texturing, blemish concealing, for interiors.	8			
USG* Texture Paint	textured	Economical plastic texturing paint.	8			
A-B Tex*	textured	Economical paint for light-medium textures, concrete ceilings.	8			

ARCHITECTURAL SPECIFICATIONS . . . . 3 & 4

"USG", "TEXOLITE", "DURAVAL", "GRAND PRIZE", "TEXTONE", "CEMENTICO", "A-B TEX", "DUR-A-DRI", "DURA-STOP", "SHEETROCK", "RED TOP", "PERF-A-TAPE", are trademarks owned and/or registered by United States Gypsum and are used by it to distinguish the particular paints and painters' supply products manufactured only by United States Gypsum Company.

PATIO'S FLOOR	INTERIOR USE								
Concrete, Asphalt, Primed-Wood, Int./Ext.	Plaster Walls & Ceilings	Gypsum Wallboard Walls & Ceilings	Wood Except Floors	Metal	Perforated Acoustical Tiles	Plaster, Fissured & Textured Acoustical Tile	Composition Wallboards & Hardboard	Porous Masonry Walls & Ceilings	Above & Below Grade Masonry
Surface Preparations and Joint Treatment Products									
	X	X					X		
	X	X					X	X	
X								X	
								X	
	X	X						X	
								X	X
		X							
		X							
		X							
	X							X	
	X[1]	X	X	X				X	
	X	X	X	X				X	
Finishes									
	X	X			X		X	X	
	X	X			X		X	X	
	X	X			X	X	X	X	
								X	
								X	
								X	X
								X	X
X									
	X	X						X	
	X	X	X	X			X	X	
	X		X	X			X	X	
	X	X			X		X	X	
	X	X							
	X	X							
	X	X					X	X	
	X	X					X	X	
	X	X					X		
	X	X						X	

Federal Specification Paints on Request

[1] Also Canvas

TECHNICAL ASSISTANCE

Keeping pace with the development of product, U.S.G. has maintained and expanded its services to the building industry. Offices in all major cities, staffed with trained paint personnel are prepared to provide information and assistance without obligation. Supplementing these representatives, the U.S.G. Architect Service Department is available to assist the architect and engineer.

SPECIFICATIONS

I. GENERAL CONDITIONS

The painting contractor shall read and be governed by the general conditions at the head of the complete specifications for this project.

II. MATERIALS

1. Deliver in original unopened containers.
2. Store to protect from damage by elements and tampering.
3. Use all materials in strict accordance with manufacturer's directions as furnished at time of material delivery.

III. MASTER SPECIFICATIONS

A. INTERIOR WORK

All surfaces must be dry, sound, clean, free of dust, grease or oil.

1. PLASTER—Fill all nicks, cracks, gouges, and other surface imperfections with Texolite Paste or Powder Spackling Putty. Use Red Top Patching Plaster to repair large holes and cracks in plaster. Large cracks may be reinforced with Perf-A-Tape Joint System. Repaired surfaces shall be sanded smooth and dust removed, or textured to match adjoining surface.

NEW PLASTER*—including any patches and repairs, must age 60 days.*

Flat Finish—*Alkyd-Latex, or Casein Paints*

(a) Pastels—2 coats of Texolite Grand Prize or Texolite Alkyd Latex Paint or 1 coat Texolite Primer Sealer tinted to approximate shade of finish coat and 1 or 2 coats Texolite Alkyd Latex or 1 or 2 coats Texolite Standard or 1 or 2 coats Texolite Flat Oil Paint.

(b) Deep Tones—1 or 2 coats Texolite Primer Sealer tinted to approximate shade of finish coat and 1 or 2 coats Texolite Flat Wall Paint or 1 or 2 coats of Texolite Alkyd Latex Paint.

Velvet Finish—*Rubber Emulsion Base Paint*—1 coat of Texolite Primer Sealer tinted to the approximate shade of the finish coat. 1 or 2 coats of Texolite Grand Prize.

Semi-Gloss Finish—1 coat of Texolite Primer Sealer and 1 or 2 coats of Texolite Semi-Gloss Enamel.

High Gloss Finish—1 coat of Texolite Primer-Sealer, or 1 coat Texolite Enamel Undercoater, (tinted to approximate shade of finish coat) and 1 or 2 coats of Texolite Gloss Enamel.

Multi-Color Finish—1 double spray application of Super Neo Fleck Enamel.

Acoustical Appearance on Ceiling—1 spray coat USG Simulated Acoustical Spray Finish.

OLD PLASTER PREVIOUSLY PAINTED*—Remove all loose or scaling paint and repair as outlined under the Plaster section.*

Flat Finish

(a) Pastels—1 or 2 coats of Texolite Alkyd Latex Paint or 1 or 2 coats of Texolite Standard Paint.

(b) Deep Tones—1 or 2 coats of Texolite Alkyd Latex or 1 or 2 coats of Texolite Primer Sealer tinted to the approximate shade of finish coat and 1 or 2 coats of flat oil paint.

Velvet Finish—*Rubber Emulsion Base Paint*—1 or 2 coats of Texolite Grand Prize.

SEMI-GLOSS FINISH—1 or 2 coats of Texolite Semi-Gloss Enamel.

High Gloss Finish—1 coat of Texolite Enamel Undercoat and 1 or 2 coats of Texolite Gloss Enamel.

MULTI-COLOR FINISH—1 double spray application of Super Neo Fleck Enamel.

Acoustical Appearance on Ceiling—1 spray coat USG Simulated Acoustical Spray Finish.

*T.M. Reg. U.S. Pat. Off.

SPECIFICATIONS

2. **GYPSUM WALLBOARD**—Prepare joints and nailheads with Perf-A-Tape* Joint System in accordance with manufacturer's directions.

   Flat Finish—1 or 2 coats of Texolite* Alkyd Latex or 1 coat Sheetrock* Sealer or Texolite Primer-Sealer tinted to approximate shade of finish coat and 1 coat Texolite Standard or Texolite Flat Wall Paint.

   Velvet Finish—*Rubber Emulsion Base Paint*—1 or 2 coats of Texolite Grand Prize or 1 coat Sheetrock Sealer or Texolite Primer-Sealer tinted to approximate shade of finish coat and 1 or 2 coats Texolite Grand Prize* paint.

   Multi-Color Finish—1 double spray application of Super Neo Fleck Enamel.

   Semi-Gloss Finish—1 coat of Sheetrock Sealer or Texolite Primer-Sealer tinted to approximate shade of finish coat and 1 or 2 coats of Texolite Semi-Gloss Enamel.

   High Gloss Finish—1 coat Sheetrock Sealer, or Texolite Primer-Sealer, or 1 coat Texolite Enamel Undercoater (tinted to approximate shade of finish coat) and 1 or 2 coats of Texolite Gloss Enamel.

   Textured Finish—1 coat Textone* of consistency to provide desired texture or 1 coat USG* Texture Paint of consistency to provide desired texture and 1 or 2 coats Texolite Grand Prize or Texolite Alkyd Latex or 1 or 2 coats of Texolite Standard.

   Sand Finish Texture—1 coat of Texolite Texture, or Texolite Drywall Surfacer.

   Stipple Finish—1 coat of Texolite Ripple, or 1 coat USG Spray Texture, or 1 coat Sheetrock Sealer or Texolite Primer-Sealer tinted to approximate shade of finish coat and 1 coat of oil stipple paint.

   Wallpaper or Wall Fabric Coverings—1 coat Sheetrock Sealer. Apply wallpaper or wall covering in accordance with the manufacturer's directions. A size over Sheetrock* Sealer is recommended.

3. **WOOD SURFACE (except floors)**—New wood (not previously painted); sand smooth, touch up knots, sap streaks, pitch spots with shellac. 1 coat pigmented oil primer sealer and 1 or 2 coats Texolite Grand Prize for velvet finish or 1 or 2 coats Texolite Semi-Gloss Enamel for semi-gloss finish.

4. **METAL**—Remove grease, oil and plaster spatterings. 1 coat of rust inhibitive primer and 1 or 2 coats Texolite Grand Prize or 1 or 2 coats Texolite Alkyd Latex or 1 or 2 coats Texolite Semi-Gloss Enamel.

5. **ACOUSTICAL TILES (perforated and heavily fissured)**—1 or 2 coats Texolite Standard, Grand Prize, or Texolite Alkyd Latex.

6. **ACOUSTICAL PLASTER AND LIGHTLY FISSURED TILE** (refer to painting instructions of plaster or tile manufacturer). 1 coat of Texolite Standard reduced in the proportion of 1 gallon paste paint to 1 gallon of water and 1 coat of Texolite Standard reduced in the proportion of 1 gallon paste paint to 2 gallons of water.

7. **INSULATION BOARD (hardboard and other composition wall boards).** —1 or 2 coats of Texolite Standard, Texolite Grand Prize, or Texolite Alkyd Latex.

8. **Acoustical Appearance On Ceiling**—1 spray coat USG Simulated Acoustical Spray Finish.

9. **MASONRY**—Surfaces such as concrete block, brick, stucco, monolithic concrete and unglazed tile. All surfaces must be dry, sound, clean, free of dust, grease, oil, efflorescence and chalkiness. For light or moderately chalky surfaces 1 coat Texolite Penetrating Sealer will penetrate the chalk and bind it to original surface to form a tight base for repainting. A coat of Texolite Block Filler will conceal voids, pores, correct or improve surface blemishes and provide a uniform sanded surface for painting. Texolite Penetrating Sealer and Texolite Block Filler can be used under any paint except cement base paints. Atmospheric and structural temperatures must be above 50°F during application and for 48 hours afterward.

   Multi-Color Finish—1 double spray application of Super Neo Fleck® Enamel.

   Washable Velvet Finish—1 coat Texolite Primer-Sealer tinted to approximate shade of finish coat and 1 or 2 coats Texolite Grand Prize.

   Flat Finish—1 coat Texolite Primer-Sealer tinted to approximate shade of finish coat and 1 or 2 coats Texolite Grand Prize; or 1 or 2 coats Texolite Standard or Texolite Alkyd Latex, or 1 or 2 coats Texolite Vinyl Exterior Paint or Texolite Latex House Paint.

   Uniform Sanded Finish—1 coat Texolite Block Filler and 1 or 2 coats Texolite Vinyl Exterior or Texolite Grand Prize. 1 or 2 coats Texolite Alkyd Latex or Texolite Standard or 1 double spray application of Super Neo Fleck Enamel.

   Control Water Penetration—Use Dura-Stop to stop the flow of water through cracks or holes, then apply Dura-Dri to the dampened porous masonry surface. Keep surface moist for about 12 hours for complete curing of the Dura-Dri.

   Portland Cement Base Finish—2 coats Cementico.

B. EXTERIOR WORK

Masonry Surfaces—Porous, Unvibrated.

All surfaces must be porous, free from oil, grease, efflorescence, chalkiness. Patch cracks or openings with Dura-Dri*, Dura-Stop* or 1 part Texolite Cementico* mixed with 2 parts clean sharp sand. Texture to duplicate original surface. Remove any rust stains.

1. **PORTLAND CEMENT BASE PAINT FINISH**—Apply on such unpainted, porous masonry surfaces as brick, concrete masonry units, unglazed tile, stucco, etc., or similar weathered surfaces painted only with portland cement base paints.

   Prepare surfaces and apply coatings in strict compliance with manufacturers directions. Be sure atmospheric and structural temperatures during and for 48 hours after application are above 50° F.

   2 coats Cementico, or 1 coat Dura-Dri and 1 coat Cementico, or 1 coat Dura-Dri (or Cementico) and 1 or 2 coats Texolite Vinyl Exterior Paint in specified color.

2. **MASONRY SURFACES**—Painted or unpainted.
   Surface treatment—remove heavy chalking by sand-blasting or other means—then apply 1 coat Texolite Penetrating Sealer. When dry, 1 or 2 coats Texolite Vinyl Exterior Paint or Texolite Latex House Paint in specified color.

   Surfaces with light to moderate chalking—1 coat Texolite Penetrating Sealer, followed, when dry, with 1 (or 2) coats Texolite Vinyl Exterior Paint or Texolite Latex House Paint in specified color.

   Sound surfaces in paintable condition—1 (or 2) coats Texolite Vinyl Exterior Paint or Texolite Latex House Paint in specified color.

3. **WOOD SURFACES** (Clapboard, shakes, shingles, etc.)—New or unpainted.

   After surface preparation as specified in manufacturers directions, 1 or 2 coats Texolite Exterior House Primer—894 White, then 2 coats Texolite Latex House Paint in specified color, or 1 or 2 coats Texolite Exterior House Primer—894 White, followed by 1 or 2 coats Texolite Exterior Gloss House Paint in specified color.

4. **WOOD SURFACES**—painted.

   Before painting prepare surfaces as required in product directions. Prime or seal as required in product directions. Then apply 1 or 2 coats Texolite Exterior Gloss House Paint in specified color, or 1 coat Texolite Exterior House Primer—894 White, followed by 2 coats Texolite Latex House Paint in specified color.

*T.M. Reg. U.S. Pat. Off.

PRODUCT DESCRIPTION

SURFACE PREPARATIONS

SHEETROCK* SEALER

A tung oil emulsion sealer designed specifically for application over gypsum wallboard. Unsurpassed in filling and bridging hairline cracks in plaster.

FORM
Ready to use.

CHARACTERISTICS
Ready to use. Ease of application. May be tinted with Grand Prize*.

PRIMING
Not required.

USES & LIMITATIONS
For use over gypsum wallboard to seal Perf-A-Tape Joints, lay the nap of the paper, and prepare the surface to receive oil stipples, enamels, flat oil paints, water thinned paints and latex paints, and/as a size under wallpaper.

TEXOLITE PRIMER-SEALER

A pigmented, easily applied, quick drying primer-sealer which "locks in" lime or alkali, equalizes "suction," provides "tooth." For use on all interior wall and ceiling surfaces. Provides more outstanding performance under water-thinned paints than any other sealers. Excellent under paints thinned with turpentine or mineral spirits, too.

FORM
Ready to use.

CHARACTERISTICS
Thoroughly seals, dries to uniform sheen, lime locking eliminates suction problems, bridges hairline cracks, lays fiber nap in gypsum or insulating types of wallboard. When drying conditions are good, may be recoated with oil, alkyd oleoresinous paints and enamels in two hours or more. Water thinned paints may be applied when sealer has dried overnight or longer, depending on drying conditions.

PRIMING
Not required.

USES & LIMITATIONS
Use on all dry, sound, clean, paintable, new or old, painted or unpainted interior surfaces. Prime metal surfaces with rust inhibitive primer. May be tinted. Apply with brush, roller or spray. Not for use on floors.

TEXOLITE EXTERIOR HOUSE PRIMER No. 894 WHITE

Oil base primer for use on painted and unpainted wood surfaces. Primarily for use as base coat for Texolite Latex House Paint.

FORM
Ready to use.

CHARACTERISTICS
Blister-resistant, breather-type coating especially recommended before application of Texolite Latex House Paint. Excellent performance under oil paints, too. Formulated to be of TTP-25A type, but is lead free. Good mildew and mold resistance and considered fume proof.

PRIMING
Not required.

USES & LIMITATIONS
Use on wood surfaces, new or previously painted, that are clean, dry, sound, free of dust, cobwebs, grease and other foreign matter. Apply when temperatures are above 50° F. When thoroughly dry, apply finish coat. Previously painted wood surfaces with slight to moderate chalk may be painted directly. Heavy chalk should be removed.

TEXOLITE PENETRATING SEALER

A special sealer formulated to penetrate and condition exterior and interior wall and ceiling surfaces which are porous and/or moderately chalky.

FORM
Ready to use.

CHARACTERISTICS
Will penetrate the chalk remaining from cement, resin emulsion or oil type paints on otherwise firm surfaces. Binds the chalk to the original surface, forming a tight base for repainting. May be recoated with any type paint, except bonding cement paints.

PRIMING
Not required.

USES & LIMITATIONS
Use on porous surfaces which are free from heavy chalk, grease, oil, wax, and other foreign materials. Surface must be cleared of peeling, flaking and crumbling conditions and must be thoroughly dry. May be tinted with colors in oil. Other colorants not recommended. Allow sealer to dry at least four days before covering with finish coatsof paint.

TEXOLITE BLOCK FILLER

An all purpose, ready to use filler for concealing voids, filling pores and presenting a uniform sand effect over all interior and exterior masonry surfaces, or other rough wall and ceiling surfaces.

FORM
Ready to use.

CHARACTERISTICS
Conceals voids, fills pores, corrects or improves surface blemishes, provides a uniform sand effect. On block walls, reduces sound transmission from one room to another. Average sound transmission loss of .42 when material is applied to both sides of 4 inch Waylite Block wall. May be coated with any type paint, except bonding cement paints. On exterior, coat with Texolite Vinyl Exterior Paint or other good grade exterior paint.

PRIMING
On surfaces which are porous and moderately chalky first apply coat of Texolite Penetrating Sealer. On other surfaces which are clean, sound, and free of foreign materials, no priming is necessary.

USES & LIMITATIONS
Provides uniform finish over normally rough surfaces. Rejuvenates old masonry walls. Use on interior or exterior, painted or unpainted, dry, sound, clean, paintable, masonry surfaces. May be tinted with Texolite Vinyl Exterior Paint, if maximum filling properties are not required. Apply when atmospheric and structural temperatures are above 50°F. Not intended to be a water-proofing material. Recommended for light duty exposure conditions on exterior applications only.

DURA-STOP*

Is a dry powder hydraulic compound, requires only water for mixing. Stops water under pressure from coming through cracks, breaks or holes in porous masonry.

FORM
Powder.

CHARACTERISTICS
Sets in 3 to 5 minutes and stops water under pressure from coming through cracks, breaks and holes in porous masonry. It must be held in place until set. Becomes harder and more water resistant in the presence of water.

PRIMING
Masonry surface should be dampened thoroughly prior to application.

USES & LIMITATIONS
For filling cracks and holes in masonry prior to the application of Dura-Dri. Dura-Stop will stop the flow of water even when the water is under pressure. Dura-Stop sets in 3 to 5 minutes, may also be used to anchor washing machines, motors and other fixtures to concrete floors and walls. Do not use on non-porous masonry or non-masonry surfaces.

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*T.M. Reg. U.S. Pat. Off.

SURFACE PREPARATIONS cont.

PERF-A-TAPE* JOINT SYSTEM

PERF-A-TAPE JOINT COMPOUND AND TOPPING

System consists of Joint Compound and strong spark perforated fiber tape in one package. PERF-A-TAPE Joint Compound and PERF-A-TAPE Topping are bedding and finishing materials respectively with the PERF-A-TAPE being supplied separately. They are designed to reinforce and conceal gypsum wallboard joints and nail heads. They are excellent for repairing cracks on plaster surfaces.

FORM
Powder (compound) and reinforcement tape.

CHARACTERISTICS
Ample working time, excellent bond, easy mixing, minimum shrinkage, smooth working, easy sanding, no alkali burning of paint. Product designed for use in hand taping or for application with special taping tools.

PRIMING
None required—both can be coated with most standard priming materials.

USES & LIMITATIONS
Used in both new and old construction for concealing and reinforcing joints and nail heads in gypsum wallboard or for reinforcing cracks, interior and exterior angles in most types of interior wall and ceiling surfaces. Not for exterior use.

READY-MIXED PERF-A-TAPE COMPOUND

A ready to use compound for concealing and reinforcing joints between panels of gypsum wallboard. This single, ready mixed product provides strong bond and extreme smoothness of finished joint. Available in either Mechanical or Hand application consistency.

CHARACTERISTICS
Smooth, strong easy working and requires minimum of sanding. Remarkable resistance to edge cracking. Assures uniform cement mixture throughout job and eliminates contamination resulting from dirty water.

FORM
Ready to use. Obtainable in either 1 or 5 gallon containers.

PRIMING
None required—can be coated with most standard priming materials.

USES
A specialized material for finer dry wall work. Excellent for repairing cracks in plaster and interior masonry not subject to moisture. On-the-wall cost same as powder compound. Compound works equally well with machine or hand tools. Containers should be protected from freezing.

TEXOLITE DRYWALL SURFACER

An aggregated coating providing a sand finish effect on interior walls and ceilings. Especially useful over drywall surfaces. Natural white color only.

FORM
Powder.

CHARACTERISTICS
Provides hard, uniform, attractive appearance. Spray applied only. Very economical. Usually painted after drying.

PRIMING
Not required.

USES & LIMITATIONS
For treating walls and ceilings in, houses, apartments, stores, offices motels and similar buildings. For interior use only. Surfaces must be dry, sound and clean. Apply when temperatures are 50° F. or more.

USG* SIMULATED ACOUSTICAL SPRAY FINISH

An aggregated coating providing an acoustical finish appearance. Natural white only.

FORM
Powder.

CHARACTERISTICS
Provides interesting, intriguing finish appearance with excellent hide and firmness. Economical, too.

PRIMING
Provides best results but often not needed.

USES & LIMITATIONS
Spray applied on interior ceilings and upper wall surfaces. Use over Gypsum wallboard, plaster and concrete. No acoustical correction is claimed. Helps conceal or diminish minor defects in sub-surface. May be second coated for heavier texture appearance. May be painted, after drying, with roller or spray.

RED TOP* PATCHING PLASTER

For easy and permanent patching or repairs on interior plaster walls and ceilings and interior concrete surfaces, at a very nominal cost.

FORM
Powder.

CHARACTERISTICS
Is non-shrinking, contains no lime, has ample working life of about 30 minutes and dries to a hard, dense uniform finish. Add only water in mixing. May be covered with any decorative material.

PRIMING
Takes any standard priming material.

USES & LIMITATIONS
For patching cracks and larger surface imperfections on interior plaster and concrete surfaces. Not recommended for concrete floors. Excellent for preparing old, defaced plaster surfaces for any type of interior decoration.

TEXOLITE SPACKLING PUTTY

Used to prepare surfaces before painting or decorating to build up or fill imperfections to provide a smooth even surface.

FORM
Powder.

CHARACTERISTICS
Exceptionally fine grind—grit free—adaptable to knife or brush application. Can be sanded. Adheres to any properly cleaned solid surface. Hardens in a few hours, forming a tough, durable surface.

PRIMING
Not required.

USES & LIMITATIONS
Used to fill small cracks, scars, slight imperfections in plaster, nicks, cracks, knotholes or nail holes in wood trim, nail holes in wallboards. To fill voids or imperfections in concrete, cracks in tile or mosaic, household repairs on furniture, toys, moulding, etc. For treating canvas and wall fabric. For interior use only.

TEXOLITE PASTE SPACKLING PUTTY

An economical, all-purpose putty—ready to use—for patching or leveling small cracks, knicks, scars in most interior surfaces. Especially fine for hair-line cracks in wood or plaster and smoothing up dry-wall work.

FORM
Ready to use.

CHARACTERISTICS
No waste in mixing—use as required direct from can. Dries to a smooth, hard finish which sands easily but will not crumble, shrink or crack.

PRIMING
Takes any standard priming material.

USES & LIMITATIONS
For fine patching in wood, plaster, drywall and interior concrete surfaces. Use putty knife, broad knife, brush or caulking gun. The solution to small surface imperfections and for repairing furniture, toys, wall fabrics, mosaic, knotholes, etc.

INTERIOR OR EXTERIOR

TEXOLITE* VINYL EXTERIOR
(poly vinyl acetate)

White and colors, fine quality, non-penetrating paint, good hiding, weathering qualities and true color.

FORM
Ready to use.

CHARACTERISTICS
Quick drying, easy to apply with brush, spray or roller. Highly weather resistant, yet permits unwanted moisture in walls to escape. Apply over dry or slightly damp (not wet) surfaces.

PRIMING
On porous and moderately chalky surfaces, first apply coat of TEXOLITE Penetrating Sealer. On clean, sound, surfaces, free of foreign material, no priming is required.

USES & LIMITATIONS
Use on painted or unpainted masonry surfaces free of flaking, crumbling, or chalking conditions. Use on all types of interior surfaces, exterior wood shakes and shingles. Two coats are best. Intermix colors for many other tints and shades. Not for use over magnesite stucco, glazed brick or tile, polished stone, or unsealed, loose, scaly, greasy, chalking, powdery or otherwise unsound surfaces, nor as a floor paint.

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*T.M. Reg. U.S. Pat. Off.

TEXOLITE
PAINT PRODUCTS

FLAT FINISHES

TEXOLITE* STANDARD
(casein flat paint)—

White and tints—cleanable water thinned paint for interior walls and ceilings providing brighter, colorful, beautiful long-lived inexpensive decoration.

FORM
Paste.

CHARACTERISTICS
Dries in one hour. No prime or size coat required for most paint jobs. Use large brush for fast application. No objectionable painty odor. No fire hazard during application. Recoatable. Cuts painting time and costs.

PRIMING
Prime new wood and unpainted metal, including exposed nailheads. All other surfaces require only one or two coats of TEXOLITE Standard.

USES & LIMITATIONS
Over old and new interior walls and ceilings in homes, hotels, apartments, offices, stores, shops, schools, hospitals, factories and warehouses. Not recommended for use over wood trim subject to wear, or under damp conditions, or where it will be subjected to excessive abrasion.

TEXOLITE ALKYD LATEX

White and tints—provides washable film combining the easy, quick application of latex paints with the flatness of alkyd paints.

FORM
Ready to use.

CHARACTERISTICS
Quick drying and reasonable in cost—flat finish—no painty odor—recoatable.

PRIMING
Prime new wood and unpainted metal, including exposed nailheads. All other surfaces require only one or two coats of TEXOLITE Alkyd Latex.

USES & LIMITATIONS
Over old and new, painted and unpainted, interior walls and ceilings in homes, apartments, offices, stores, schools, hospitals, factories and warehouses and on residential development projects. Wide variety of colors by intermixing standard tints.

VELVET FINISH

TEXOLITE* GRAND PRIZE*
(vinyl plastic)

Flat wall paint. Available in white and tints. Provides durable, washable, velvet, smooth finish.

FORM
Ready to use.

CHARACTERISTICS
Easily applied. Will dry to the touch in one hour. No objectionable painty odor. Excellent leveling. Unaffected by alkalinity in plaster and concrete. One coat covers well. Can be second-coated same day under good drying conditions.

PRIMING
New wood and unpainted metal, including exposed nailheads, should be primed. All other surfaces usually require only one or two coats of GRAND PRIZE Paint.

USES & LIMITATIONS
Over old and new interior walls and ceilings in homes, apartments, offices, stores, schools, hospitals, factories, warehouses. Over painted and unpainted plaster, wallboard and concrete. Wide variety of colors available by intermixing colors and by tinting with TEXOLITE Colorants. Not recommended for use on floors or under highly humid conditions.

MULTI-COLOR FINISH

SUPER NEO FLECK®
MULTI-COLOR ENAMEL
(Odorless)

Intriguing, permanent multi-colored finish, scrubbable, durable, abrasion resistant. Soft, muted, easy-to-live with colors. Spray application only.

FORM
Ready to use.

CHARACTERISTICS
Economical—fast application, quick drying, self-priming, high coverage, quick tenancy. No offensive odor, non-toxic, non-flammable, won't flash. Long storage life. Film thickness equal or exceeding two coats conventional paints.

PRIMING
No primer or "base" coat required over most surfaces. Prime unpainted metal, exposed nailheads, and some new wood finishes.

USES & LIMITATIONS
Over most interior, new or old surfaces in housing projects, commercial and industrial buildings; for maintenance work—quick rental unit re-occupancy. Not for floors or exteriors.

COATINGS

TEXOLITE LATEX HOUSE PAINT

Long lasting, good hiding, easy to apply, time saving, protective, flat finish house paint. White and colors.

FORM
Ready to use.

CHARACTERISTICS
Breather-type, alkali-resistant, fade resistant, mildew resistant, weather and chalk-resistant. Apply with brush, roller or spray.

PRIMING
TEXOLITE Exterior House Primer-894 White. Use on painted or unpainted wood surfaces. Frequently not needed on masonry surfaces.

USES & LIMITATIONS
For most new, old painted and unpainted wood siding, shingles and shakes, weathered cement asbestos siding, poured concrete, stucco, cement blocks.

New unpainted stucco, poured concrete, patches in masonry surfaces must age at least 30 days. Use TEXOLITE Penetrating Sealer on light to moderately chalky surfaces. Remove excessive chalk, loose or flaking materials by sand-blasting or other means. Then apply TEXOLITE Penetrating Sealer. Not a floor paint.

On new and previously painted wood siding, shingles etc., use with TEXOLITE Exterior House Primer-894 white according to label directions.

TEXOLITE DURA-DRI*
(controls water penetration)

White and tints. Heavy bodied protective coating for control of water penetration through porous masonry surfaces. Decorates and protects.

FORM
Powder.

CHARACTERISTICS
Easy, effective system for controlling water penetration through such porous masonry surfaces as brick, stucco, cement block, poured concrete and similar materials. Apply by brush or trowel.

PRIMING
Masonry surface should be thoroughly dampened immediately prior to application.

USES & LIMITATIONS
Over porous masonry surfaces above and below grade on interiors and exterior surfaces in homes, office and store buildings, schools, factories and warehouses. Not for use on floors. Additional attractive colors possible by overcoating with CEMENTICO, or TEXOLITE Vinyl Exterior.

TEXOLITE CEMENTICO*
(hydraulic cement paint)

White or tint paint for bringing new beauty, life and color to porous masonry surfaces.

FORM
Powder.

CHARACTERISTICS
Made of white portland cement and other special ingredients to produce hardness, binding qualities and workability. Only lime-proof colors are used. Durable. Water resistant. Bonds to porous masonry surfaces.

PRIMING
Masonry surface should be dampened thoroughly immediately prior to application.

USES & LIMITATIONS
Use only over unpainted porous masonry surfaces such as brick, clay tile, portland cement stucco, concrete, unpolished building stone and similar surfaces. Not recommended on magnesite stucco, wood, painted or greasy surfaces, smooth plaster, terra cotta, glazed brick and tile, vibrated or very dense concrete areas, floors, asbestos-cement shingles and similar non-porous or non-masonry materials.

FLOOR PAINT

TEXOLITE FLOOR PAINT
(Latex)

A medium gloss floor paint for interior or exterior use. White and colors.

FORM
Ready to use.

CHARACTERISTICS
Easy mixing—alkaline resistant—readily applied with brush and roller over clean sound paintable surfaces.

PRIMING
Coat any dusting or powdery concrete surfaces with TEXOLITE Penetrating Sealer. Concrete must be well cured and dry. Seal wood flooring with high quality porch and deck primer. Primer usually not required other surfaces.

USES & LIMITATIONS
For newly laid or freshly scrubbed concrete floors, patios, porches, basements, primed wood floors, breezeways, playrooms, offices, schools, factories, similar areas. Normally requires no etching, except on slick highly troweled spots or other unusual circumstances. Not recommended in auto showrooms, garages, where gasoline spillage is possible, or on surfaces continually wet or subject to long periods of dampness. Usually dries to touch in 30 minutes. Under good drying conditions may be exposed to light foot traffic in 1 to 1½ hours. Heavy traffic requires longer curing.

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*T.M. Reg. U.S. Pat. Off.

TEXOLITE
PAINT PRODUCTS

OIL PAINTS

TEXOLITE* SEMI-GLOSS ENAMEL (Interior)

In matching colors to TEXOLITE GRAND PRIZE* and TEXOLITE Alkyd Latex paints.

TEXOLITE Enamel Undercoat (Interior)

TEXOLITE MACHINE BASE PAINTS

In white and neutral bases, to be tinted with TEXOLITE Machine Colorants. More than 1156 colors obtainable.

TEXOLITE Semi-Gloss Enamel (Interior)
TEXOLITE Gloss Enamel (Interior)
TEXOLITE Flat Wall Paint (Interior)
TEXOLITE Exterior Gloss House Paint

FORM

Ready-to-use oil paints.

CHARACTERISTICS

High quality spirit or turpentine thinned oil paints.

PRIMING

As required.

USE & LIMITATIONS

For application on dry properly prepared surfaces.

TEXTURE FINISHES

USG SPRAY TEXTURE

A well balanced coating for application over gypsum drywall and plaster surfaces. Provides pleasing rounded texture effect. White only.

FORM

Powder.

CHARACTERISTICS

Easy mixing, economical texture treatment providing excellent hardness and adaptability. Provides good under-surface concealment.

PRIMING

Usually not required.

USES & LIMITATIONS

For interior use only. Generally applied by spray. Light stipple effect usually attained but can be varied somewhat with application techniques. Frequently applied in two coats with second coat splattered over dry first coat to provide intriguing results. Normally painted after drying.

TEXOLITE TEXTURE—TEXOLITE RIPPLE
(Rubberized Sand) (Latex—Unaggregated)

Latex emulsion paints. TEXOLITE Texture produces slight sand finish effect with light under-texture. TEXOLITE Ripple provides a smooth rounded stipple appearance. Both available in white and tints.

FORM

Ready to use.

CHARACTERISTICS

Dries quickly, applies quickly. Economical. Usually one coat treatment when applied by brush followed by roller, roller, or spray. No objectionable paint odor.

PRIMING

Prime new wood and unpainted metal, including exposed nailheads. All other surfaces usually require only one coat.

USES & LIMITATIONS

Over new and old, painted or unpainted, interior walls and ceilings in homes, offices, stores, shops, schools, churches and on residential development projects.

TEXTURE FINISHES

TEXTONE*
(plastic texture)

A plastic paint meeting the demand for a dependable, economical, easily applied texture medium capable of satisfying every requirement of modern decoration.

FORM

Powder.

CHARACTERISTICS

TEXTONE properly applied forms a texture surface of superior hardness. Furnished in white only. Can be tinted with TEXOLITE Standard or TEXOLITE Tube Colorants, or can be coated with most types of wall paints.

PRIMING

No primer usually required.

USES & LIMITATIONS

For producing light, modern textures as well as the heavier period designs over any dry, solid clean interior surface. For decorating work over new plaster, gypsum wallboards, and insulating wallboards. Especially useful in refinishing cracked plaster surfaces; for producing stone effects, antique effects and stencil work.

USG* TEXTURE PAINT
(plastic)

A popular paint that is easy to use. It provides a wide range of texturing possibilities and is lower in price than TEXTONE paint. Available in white.

FORM

Powder.

CHARACTERISTICS

A good working plastic paint for uses similar to those secured with TEXTONE. Somewhat less coverage per pound. Provides excellent textures. Tints can be secured by tinting with TEXOLITE Standard or TEXOLITE Tube Colorants, or can be coated with most types of wall paints.

PRIMING

No primer usually required.

USES & LIMITATIONS

For interesting textures over dry, clean, solid surfaces such as new plaster, gypsum wallboards, insulating wallboards, etc. Also on old cracked plaster surfaces.

A-B TEX*

An economical, easy working texturing paint—white only to produce the popularly desired light to medium textureds.

FORM

Powder.

CHARACTERISTICS

Easy mixing—economical—readily applied with brush or roller over clean-dry-firm interior surfaces. Also used as a spackling treatment on poured concrete ceilings.

PRIMING

No primer usually required.

USES & LIMITATIONS

For use over any clean-dry-sound interior wall or ceiling surface of plaster (new or old) gypsum wallboard and insulating wallboard. When used as spackling treatment on concrete ceilings, first grind down fins and other projections, then lightly grind balance of ceiling to remove any form oil or grease. Use a trowel for this spackling operation.

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